RADFORD ARMY AMMUNITION PLANT

SUPPLEMENTAL PHOTOGRAPHIC DOCUMENTATION OF ARCHETYPAL BUILDINGS, STRUCTURES, AND EQUIPMENT FOR U.S. ARMY MATERIEL COMMAND NATIONAL HISTORIC CONTEXT FOR WORLD WAR II ORDNANCE FACILITIES

by
K. Diane Kimbrell
Kathleen E. Hiatt

U.S. ARMY MATERIEL COMMAND HISTORIC CONTEXT SERIES
REPORT OF INVESTIGATIONS
NUMBER 6B

GEO-MARINE, INC.

US Army Corps
of Engineers
Fort Worth District

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SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188
1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE				
4. PERFORMING ORGANIZATION REPORT NUMBERS U.S. Army Materiel Command Historic Context Series, Report of Investigations Number 6B			5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION Geo-Marine, Inc.	6b. OFFICE SYMBOL *(if applicable)*		7a. NAME OF MONITORING ORGANIZATION US Army Corps of Engineers, Fort Worth District	
6c. ADDRESS *(City, State, and Zip Code)* 550 E. 15th Street / Plano, Texas / 75074			7b. ADDRESS *(City, State, and Zip Code)* PO Box 17300 Fort Worth, Texas 76102-0300	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION US Army Corps of Engineers, Fort Worth District	8b. OFFICE SYMBOL *(if applicable)* CESWF-PL-RC		9. PROCUREMENT INSTRUMENT ID NUMBER DACA63-93-D-0014 Delivery Order No. 0014	
8c. ADDRESS *(City, State, and Zip Code)* PO Box 17300 Fort Worth, Texas 76102-0300			10. SOURCE OF FUNDING NUMBERS	
			PROGRAM ELEMENT NO.	PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE *(Include Security Classification)*

Radford Army Ammunition Plant Supplemental Photographic Documentation of Archetypal Buildings, Structures, and Equipment for Army Materiel Command National Historic Context for World War II Ordnance Facilities

12a. PERSONAL AUTHOR(S)

K. Diane Kimbrell and Kathleen E. Hiatt

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT *(Year, Month, Day)*	15. PAGE COUNT
Final Report	FROM Sept. 1993 to Apr. 1995	April 1995	205 + Appendix

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS *(Continue on reverse if necessary and identify by block number)*
FIELD	GROUP	SUB-GROUP	Photographic documentation of World War II-era buildings, structures, and equipment at the Radford Army Ammunition Plant
05	06		

19. ABSTRACT *(Continue on reverse if necessary and identify by block number)*

This report presents a photographic record of the archetypal buildings, structures, and equipment of the World War II Ordnance Department's government-owned, contractor-operated (GOCO) industrial facility, the Radford Army Ammunition Plant, at Radford, Virginia. This photographic documentation was completed under partial fulfillment of an Army Materiel Command (AMC) Legacy Resource Program demonstration project for assistance to small installations and in fulfillment of the 1993 Programmatic Agreement among the AMC, the Advisory Council on Historic Preservation, and Multiple Historic State Historic Preservation Officers concerning the program to discontinue maintenance, or dispose, of particular GOCO properties.

The objective of the project was to photographically record World War II-vintage equipment and buildings, some of which housed different stages of the ammunition manufacturing process and were of the same architectural design. Modern buildings and equipment are not included in this document. Efforts were made to arrange the photographs in the order of ammunition manufacture and facility processes; however, this presentation should not be perceived as a complete chronological sequence for ammunition manufacturing during World War II. The buildings photographed in this document are classified as under either "stand-by" or "layaway" status. The active buildings depicted in this volume are of an insensitive and/or "safe" nature and include Administration and Shop buildings.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION	
☐ UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS	Unclassified	
22a. NAME OF RESPONSIBLE INDIVIDUAL Joseph Murphey	22b. TELEPHONE *(Include Area Code)* 817-334-2625	22c. OFFICE SYMBOL CESWF-PL-RC

DD FORM 1473, JUN 86 *Previous editions are obsolete* SECURITY CLASSIFICATION OF THIS PAGE

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U.S. ARMY CORPS OF ENGINEERS
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April 1995

CONTRACT DATA

The preparation of this document was accomplished under Contract No. DACA63-93-D-0014, Delivery Order No. 14 (GMI project no. 1114-014), with the U.S. Army Corps of Engineers, Fort Worth District, Fort Worth, Texas 76102.

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I.

INTRODUCTION

This report presents a photographic recordation of the archetypal buildings, structures, and equipment of the Ordnance Department's World War II government-owned, contractor-operated (GOCO) industrial facility, Radford Army Ammunition Plant, Radford, Virginia. Geo-Marine, Inc. was contracted by the U.S. Army Corps of Engineers, Fort Worth District, to undertake this project in September of 1993. Duane E. Peter, Director of the Cultural Resources Division of Geo-Marine, Inc., acted as Principal Investigator for the project. Kathleen Hiatt completed the photographic fieldwork for the project.

This photographic documentation was completed under Delivery Order No. 14, Contract No. DACA63-93 D-0014, Task C, in partial fulfillment of an Army Materiel Command (AMC) Legacy Resource Program demonstration project for assistance to small installations. This documentation also represents partial fulfillment of the requirements of the 1993 Programmatic Agreement among the AMC, the Advisory Council on Historic Preservation, and multiple State Historic Preservation Officers concerning the program to discontinue maintenance of, or dispose of, particular government-owned properties. This work was conducted in compliance with the National Environmental Policy Act of 1969 (PL 90-190); the National Historic Preservation Act of 1966 (PL 96-515), as amended; the Archaeological and Historic Preservation Act of 1974 (PL 93-291), as amended; and Executive Order No. 11593, "Protection and Enhancement of the Cultural Environment."

In completion of this task, a map showing building numbers; a photographic log; the photographs and captions of various buildings, structures, and equipment; and a brief installation history have been included for the Radford Army Ammunition Plant.

II.

PHOTOGRAPHIC RECORDATION LOGISTICS AND METHODOLOGY

The objective of Task C was to photographically record World War II vintage buildings and equipment. Numerous buildings that housed different stages of the ammunition manufacturing process were of the same architectural design. Accordingly, the order of photographs that follows is based on differences in architectural design, before the step-by-step process of ammunition manufacturing. Modern buildings and necessary equipment in ammunition processing are absent from this photographic account due to their vintage (i.e., replacement equipment, though similar in function and/or design, was not photographed). Ammunition manufacturing is divided into lines according to the type of ammunition being manufactured and by process stages. Additionally, there may be more than one line for the same ammunition type at the same stage. Accordingly, the architectural design of these buildings in different lines is similar, as is their equipment. Photographs of specific building types were not taken from a single line, rather the photographs were taken from any number of lines as directed by the sun angle and physical restrictions. In short, though efforts were made to arrange the photographs in order of ammunition and facility processes, the presentation should not be perceived as a complete and chronological order of ammunition manufacturing.

Equipment was commonly found stored in a different facility than where it was housed when it was in use. Thus, in some cases, equipment that is depicted may not be a part of the process indicated by the building it is in. This is another reason not to take this account as a step-by-step explanation of ammunition plant processes.

Photographs of ammunition buildings and equipment in this account are classified under either "stand-by" or "lay-away" status. Depicted active buildings are of an insensitive and/or "safe" nature. Such buildings include administration and shop buildings.

Buildings of active status could only be photographed from a designated distance. Active status structures were photographed only if discernible architectural differences existed. For example, active Rolled Powder Line #1 buildings whose architectural design differed from stand-by Rolled Powder Line #4 buildings were photographed from the designated distance. Photographs of the lay-away buildings and equipment were representative of the active, off-limits properties according to the photographer's escort.

Photographic angles were largely dependent upon the angle of the sun and spatial restrictions. Time constraints and work schedules of the escorts did not allow for return visits to buildings that may have been better depicted with a different sun angle. In many cases, preferred photography angles were impossible due to overhead pipelines, power line poles, and other structures.

Indoor lighting was also a determining factor in photographic results of plant equipment. Electrical power had been shut off to the buildings on lay-away status. Unbarred windows and doors were opened and a camera flash was employed to compensate for poor lighting conditions. It was not confirmed whether the sprinkler system or fire suppression system was disengaged, and it was known that a camera flash would be sufficient to trigger the deluge system. Thus, the camera flash was not utilized in the rolled powder buildings where such a network of sprinklers existed. Subsequently, photographs of some equipment were not taken. Indoor photography of equipment was also controlled by spatial restrictions. It was virtually impossible to photograph tanks spanning two or more stories. In some instances, walls and other equipment obstructed photographic angles; therefore, photographs of some equipment were not possible.

The age of equipment was questionable. Each piece of equipment has a plant inventory number. An inventory list of the equipment details each piece by its inventory number. However, not every piece of equipment on this list had a manufacture or acquisition date. Increasing the uncertainty of the equipment's vintage was the illegibility of or absence of the inventory tag. In addition, the equipment inventory list was not exhaustive. For instance, the list did not include "installed equipment;" furthermore, installed equipment was not easily discernible. Equipment installed at the time of the building's construction, in many cases has been replaced in recent times. The installed equipment does not have a definitive appearance, and purchased equipment without an inventory tag may have been mistaken as installed equipment. Photographs were taken of all equipment where the equipment's age was in question. Thus, the equipment that is found within this account is not definitely World War II equipment unless a date is listed for that piece. However, the equipment included in this account is representative of the World War II era.

Pieces of equipment were found in various stages of disassembly. These pieces were not photographed unless they retained sufficient physical integrity to indicate their former function. In this volume, such pieces are labeled as being in a state of partial disassembly. Motors, tanks, and pumps are necessary in numerous plant processes. Due to the common function and design of such equipment, a single photograph was taken to represent any number of similar pieces of equipment. A representative unit was selected for its physical integrity and photographic accessibility.

III.

HISTORICAL OVERVIEW

The Radford Army Ammunition Plant, located in the New River Valley of southwestern Virginia (Figure 1), was one of two smokeless powder manufacturing facilities constructed under a limited expansion program by the Quartermaster Corps (taken over later in 1941 by the Corps of Engineers) in the summer of 1940 (Thomson and Mayo 1991:108). The site was chosen based on several criteria set up by the Ordnance Department. For instance, the site had to be a non-coastal area (at least 200 miles away from any border) for obvious reason of national defense. The site could not have been located near a large center of population, for safety reasons, although it had to have access to a sufficient work force. In addition, the plant had to be located in an area that had access to electricity, water, railroads, and highways to provide a degree of self-sufficiency. Finally, the site also was chosen on the basis that large tracts of land could be purchased (for the safety requirements that mandated adequate spacing between buildings), and the land price had to be relatively inexpensive (Thomson and Mayo 1991:108-109).

As Radford met these criteria, construction began on August 23, 1940 under a contract awarded to the Hercules Powder Company of Wilmington, Delaware, and the initial phase of construction was completed late in 1941. The plant consisted of 687 buildings, most of which were of a production nature (MacDonald and Mack 1984:20). The general layout of the plant was divided into three production lines for the manufacture of smokeless powder, an Administration Area, an Acid Area, a Shops Area, Residential facilities, and Storage facilities; all of which were centrally located around the Main Power House. The smokeless powder production lines at Radford Ordnance Works (its original name) were set up parallel to one another; however, unique to ordnance plants, Radford's lines were set up in a way in which each line was connected to one another at each stage of the production process. This allowed for the transfer of materials from one line to another when it was necessary during manufacture. Although originally planned as a part of the site, the New River Unit was constructed in 1941, 12 miles away from the Radford Ordnance Works due to a lack of space needed for safety requirements. The New River Unit fulfilled bag manufacturing and bag loading needs during World War II (MacDonald and Mack 1984:23).

The technology involved in the manufacture of single-based smokeless powder at Radford Ordnance Works was based on the same method developed by French chemist, Vielle, in 1884. Although the explosive quality of nitrated cotton was previously known, Vielle perfected the method by gelatinizing the nitrocellulose (nitrated cotton) with a solvent (either ether or alcohol) and then cutting it into small squares which controlled the rate of burning (Greer n.d.:n.p.) One modification of this process that occurred at Radford was the supplementation of wood pulp as a source of cellulose, in addition to (but not a complete substitution for) cotton fibers. Radford was one of two plants that were first equipped with the machinery

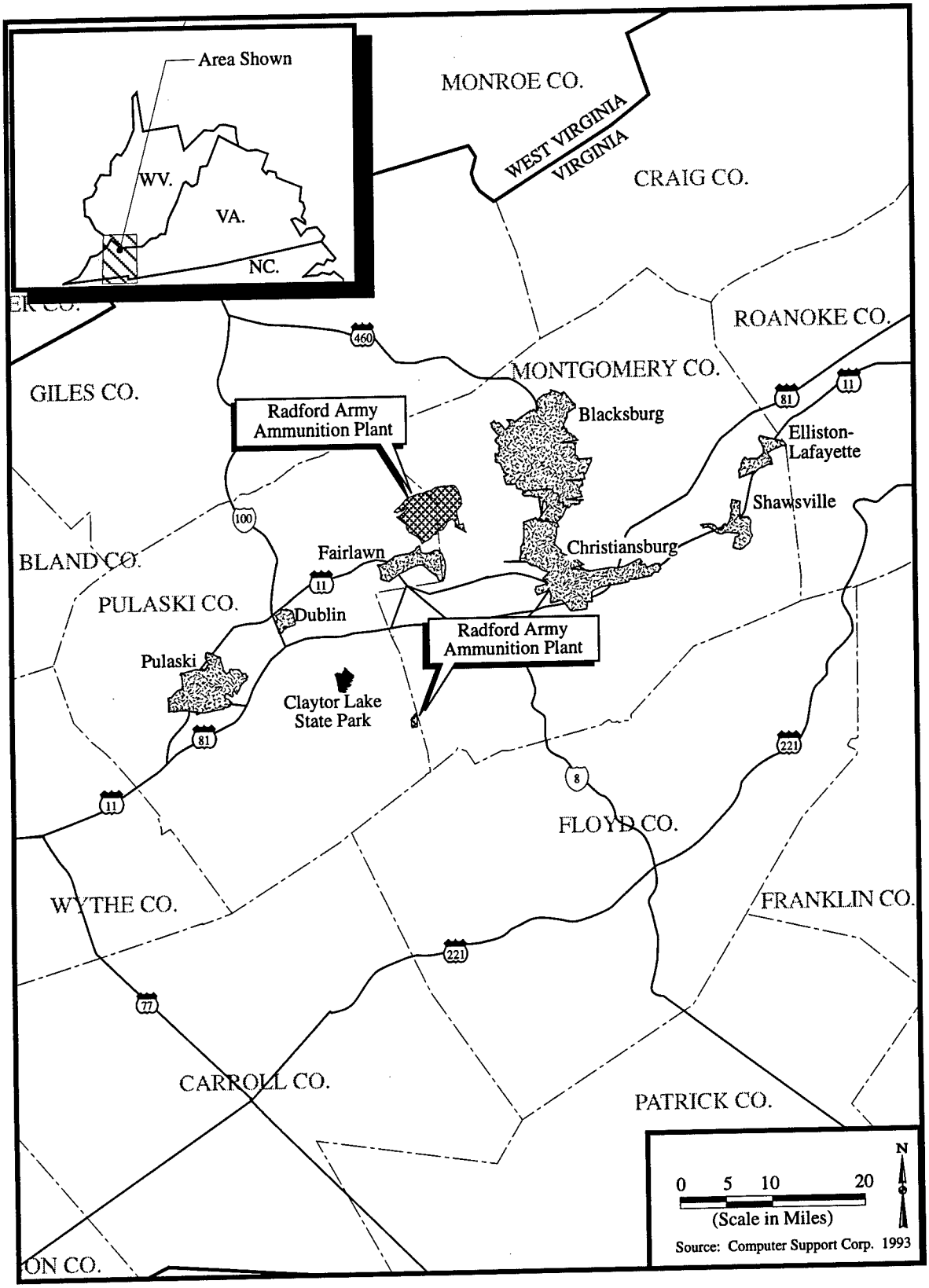

Figure 1. Regional Location of Radford Army Ammunition Plant.

necessary to make this adjustment. The production of this type of smokeless powder began at Radford Ordnance Works in April of 1941 (Thomson and Mayo 1991:137).

In the following description, the production process for smokeless powder that took place at the plant is briefly outlined. Pure cotton fiber or wood pulp was nitrated by mixing sulfuric and nitric acids with the cellulose in the Nitrating House. Following nitration, the nitrocellulose went through a series of boilings, drownings, pulpings, and grindings to remove all impurities and produce the form necessary for entering the actual powder line processes. These steps took place in the Boiling Tub Houses, Beater Houses, Poacher and Blending Houses, and finally at the Wringer Houses where the water was removed.

At this point, the nitrocellulose entered the powder line where it went through a series of processes in the Dehydration House, the Mix House, and the Block Press House. In these facilities, the nitrocellulose was pressed into blocks, broken up, stabilized, and pressed into blocks again. Next, in the Finishing Press House, the blocks were pressed through dies producing long strands which were then cut into various sized grains in the Cutting Houses. The powder nitrocellulose was then ready for the solvent recovery process which involved several steps to reduce the amount of ether or alcohol present. After this was completed, it was sent to the Air Dry House to dry the powder. If the powder was to be used for rifles, it was sent to the Glazing House to be covered with graphite; however, the cannon powder did not require this process. The powder was then screened to achieve uniform grain size and was sent on to be packed for storage and finally for shipment to loading plants (MacDonald and Mack 1984:25-26).

Radford Ordnance Works produced not only smokeless powder, but also many of the raw materials used in the powder production process. For instance, the plant had facilities for the manufacture of nitric acid and nitroglycerin. In addition, during World War II, the facilities were expanded to include the manufacture of the raw material oleum for use in the production of rocket propellants, TNT, pentolite, and rolled powder (MacDonald and Mack 1984:27). The expansion of the plant also included an experimental or "pilot" plant for the manufacture of solventless-extruded powders for rocket propellant. The solventless-extruded powders eliminated two major difficulties that were encountered with the solvent-extruded powders: one, the time involved in drying the grains was greatly reduced, and two, it eliminated the grain deformation that took place in the drying process. Radford was also equipped with the necessary dry-extrusion press and had a capacity of producing 1200 pounds of rocket propellant each day (Thomson and Mayo 1991:138).

The bag manufacturing and loading facilities of the New River Unit began production in the fall of 1941. The facility consisted of four lines for loading smokeless powder and two lines for loading black powder. The lines consisted of a bag making facility, as well as powder weighing and loading areas. After the bags were loaded, they were stitched closed and ready for final inspection, storage, or shipment (MacDonald and Mack 1984:29-30).

After World War II, the plant was put on stand-by status and the contract was terminated in September of 1945. During the next summer, a contract was awarded to the Hercules Powder Company to produce ammonium nitrate at the acid plant (at the Radford Unit) that could be used for fertilizer. The production continued until April of 1949. The New River Unit was also placed on stand-by status and stayed at that designation until February of 1950 (MacDonald and Mack 1984:30).

With the onset of the Korean War, Radford Ordnance Works was reactivated. During the course of production, to satisfy changing ordnance needs many buildings had to be renovated and other buildings were demolished. After the war, Radford stayed active at a reduced capacity; however, the remaining manufacturing buildings at the New River Unit were sold (MacDonald and Mack 1984:31-32).

Once again, during the outbreak of the Vietnam War, Radford's production of ammunition was increased in 1962. The height of Radford's production during the Vietnam War came in 1968. In the following

years, Radford underwent a modernization plan. Several new facilities were constructed that proved to update the plant's technology. The utilization of the CAMBL or continuous automated multi-based line over the use of the CASBL (continuous automated single-based line) was put into place at this time. During the same period, Radford experienced two explosions; one destroyed the "A" TNT line, and despite the spacing requirements for Ordnance plants, the "B" and "C" lines were heavily damaged as well (MacDonald and Mack 1984:32).

During the 1980s, the plant utilized the latest in computer-controlled manufacturing technology. This technology (now considered out-of-date) was built and tested, but put on stand-by prior to any product manufacture. The production of TNT ceased completely in July of 1986, and the entire plant placed on stand-by status.

With the onset of Desert Storm, a plan to reactivate the production of TNT was initiated and work was begun, but the plant was returned to stand-by status prior to any actual production. Today, production is greatly cut back; "A" line is shut down, but "B" and "C" lines still produce multi-based powder. It is estimated that by the end of 1995 the employee roster will be cut to 1000 persons, but at this time Radford is not slated for closure.

IV.

PHOTOGRAPHIC DOCUMENTATION

ADMINISTRATIVE FACILITIES

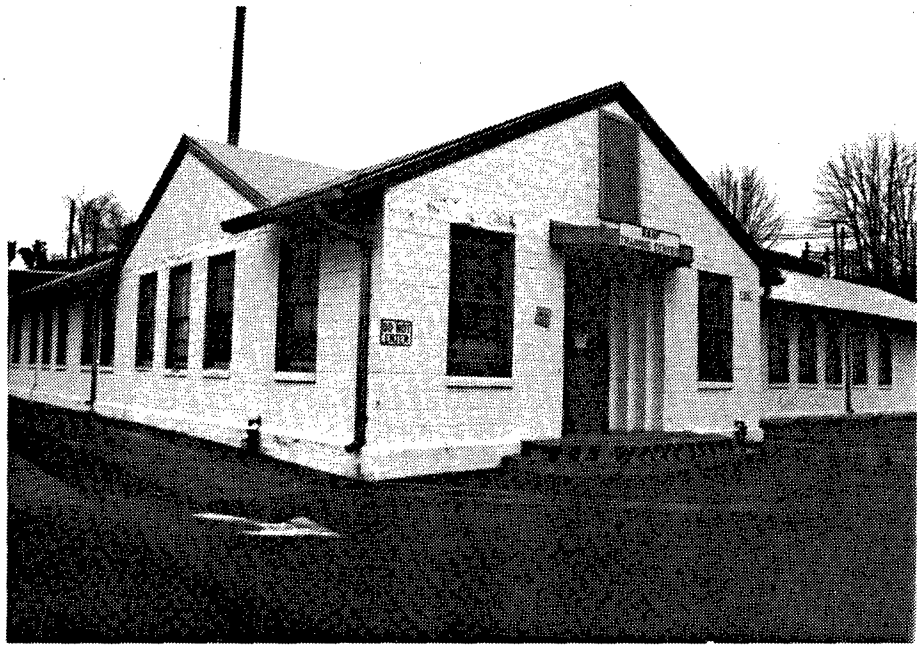

Figure 1. Building 215: General Purpose Administration Building.

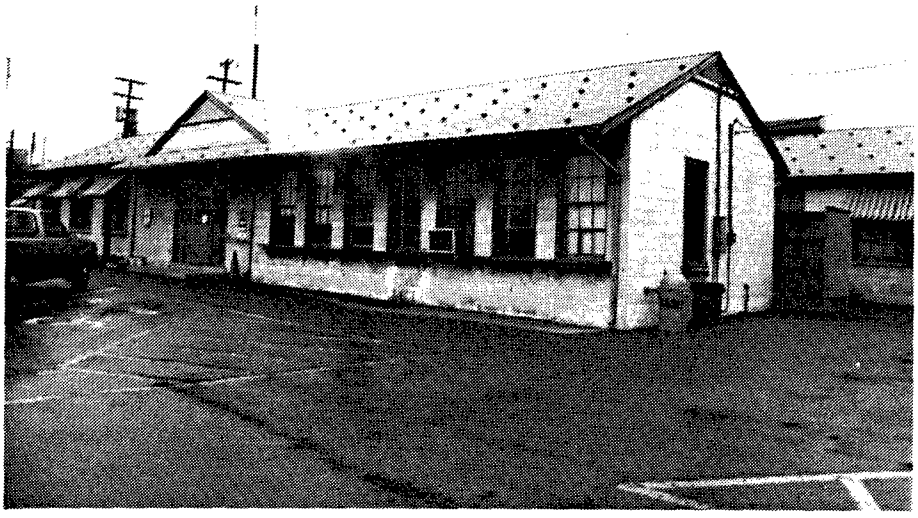

Figure 2. Building 229: Administration Building where the credit union was housed.

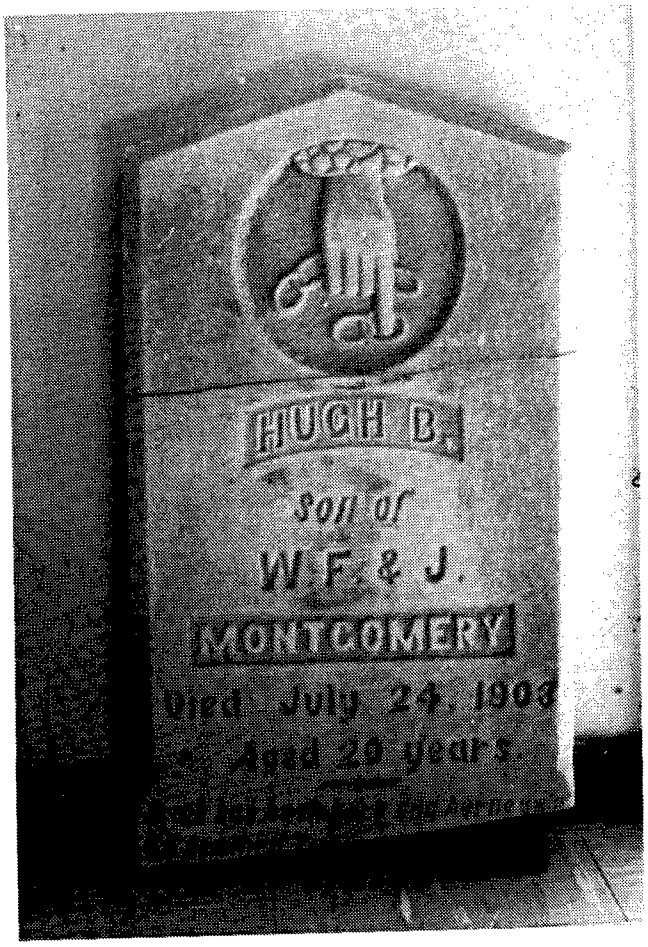

Figure 3. Building 229: Tombstone, origin unknown. It reads, "Hugh B./ Son of W.F.& J./ Montgomery/ Died July 24, 1903/ Aged 20 Years/ Death has been here and Borlle Away/ A Brother From . . ." It currently rests in the courtyard of Building 229.

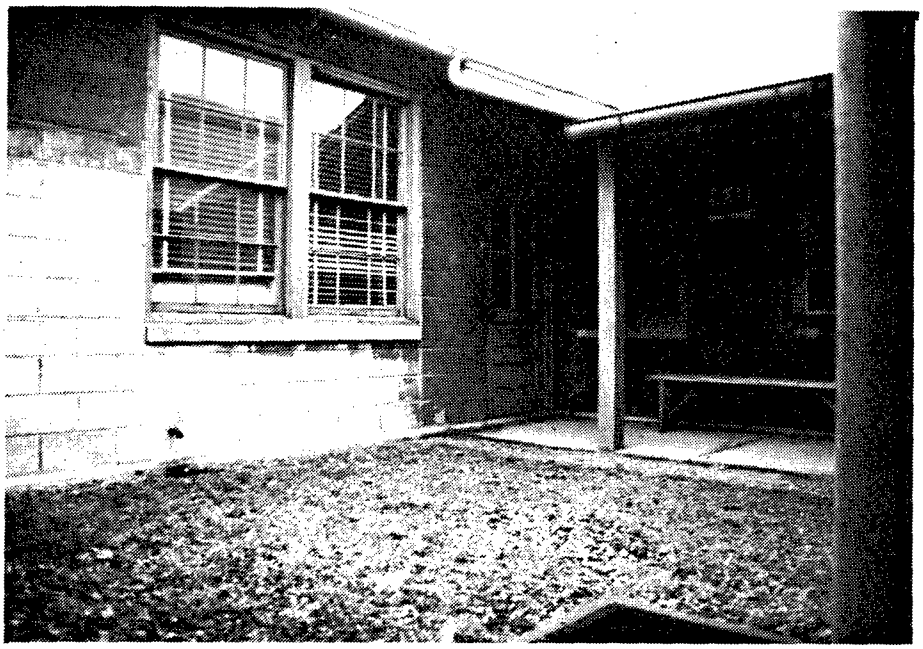

Figure 4. Building 229: View of the only interior courtyard at the plant.

Figure 5. Building 521: Magazine Office and Change House with a "chimney" that serves as a heater smokestack.

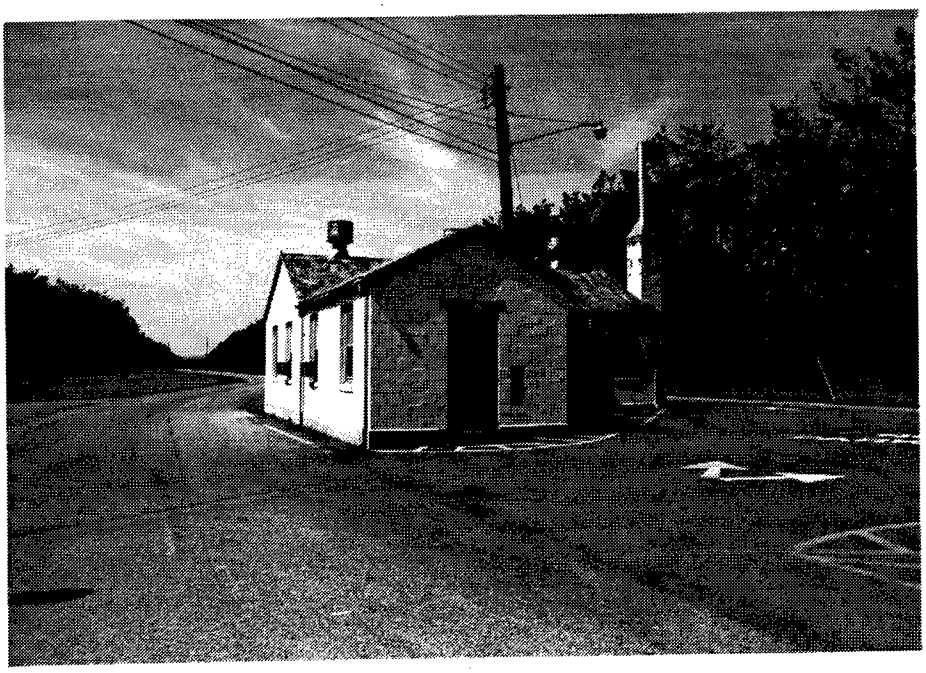

Figure 6. Building 1993: Magazine Area Office with Latrine.

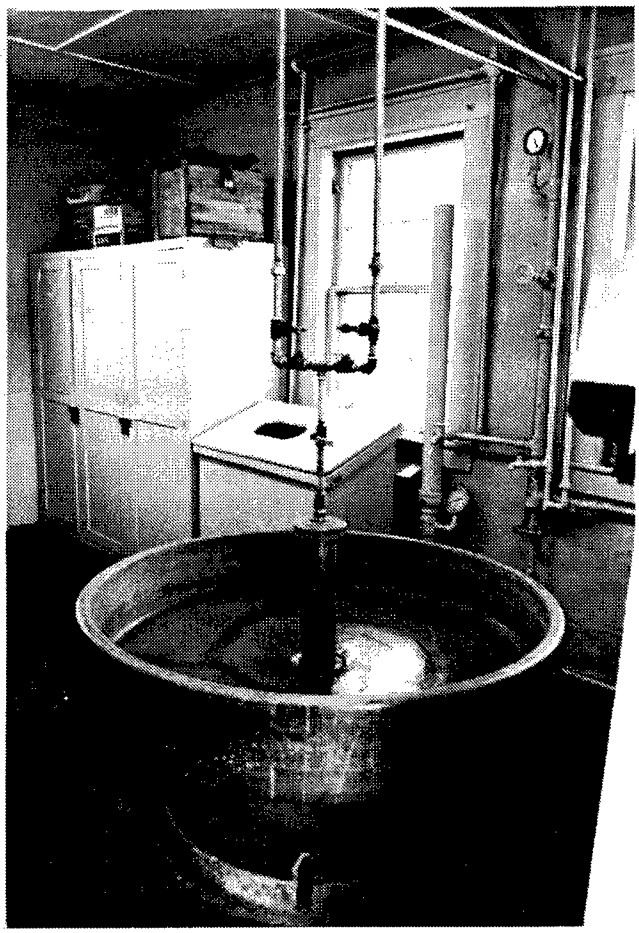

Figure 7. Building 1993: Interior view of a Latrine hand wash basin which is inside the Magazine Area Office.

Figure 8. Building 7100: Office with incinerator.

HOUSING FOR EMPLOYEES

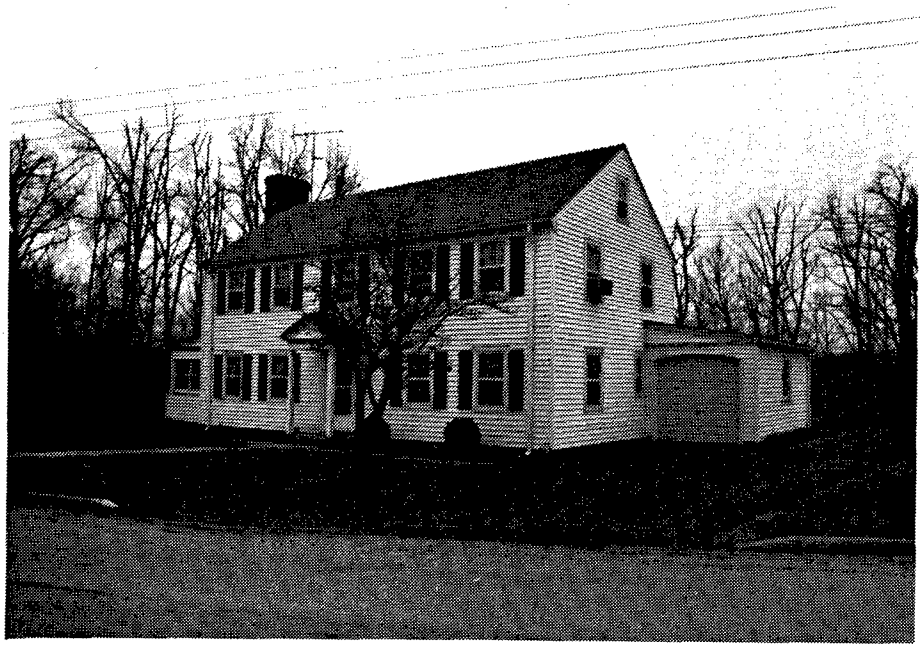

Figure 9. Staff Village House #2 with porch on left side of house and the garage on the right.

Figure 10. Staff Village Duplex (residence #13 and #15) with porches on either side of the building and a two-door garage is off to the left.

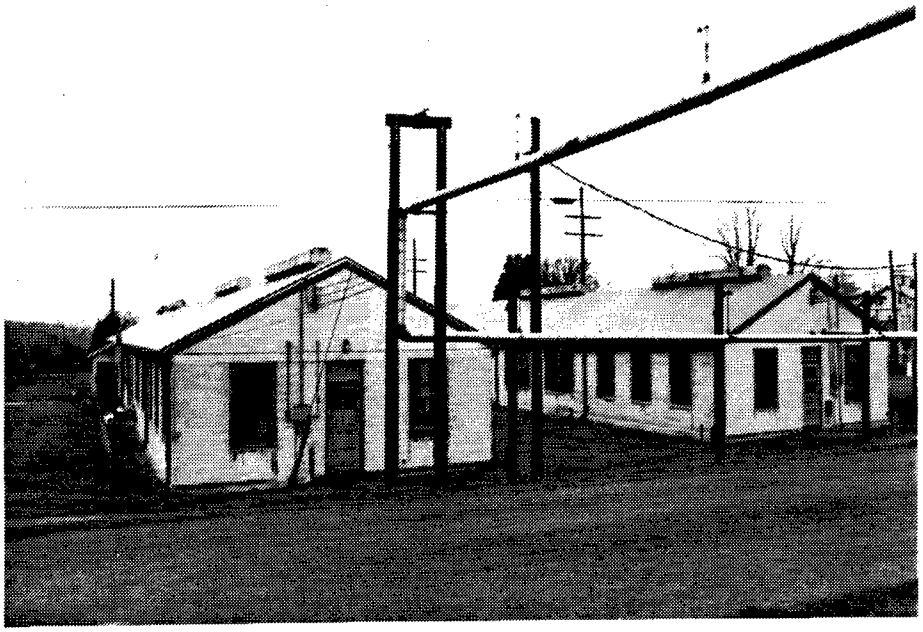

Figure 11. Building 207: Single-story Barracks.

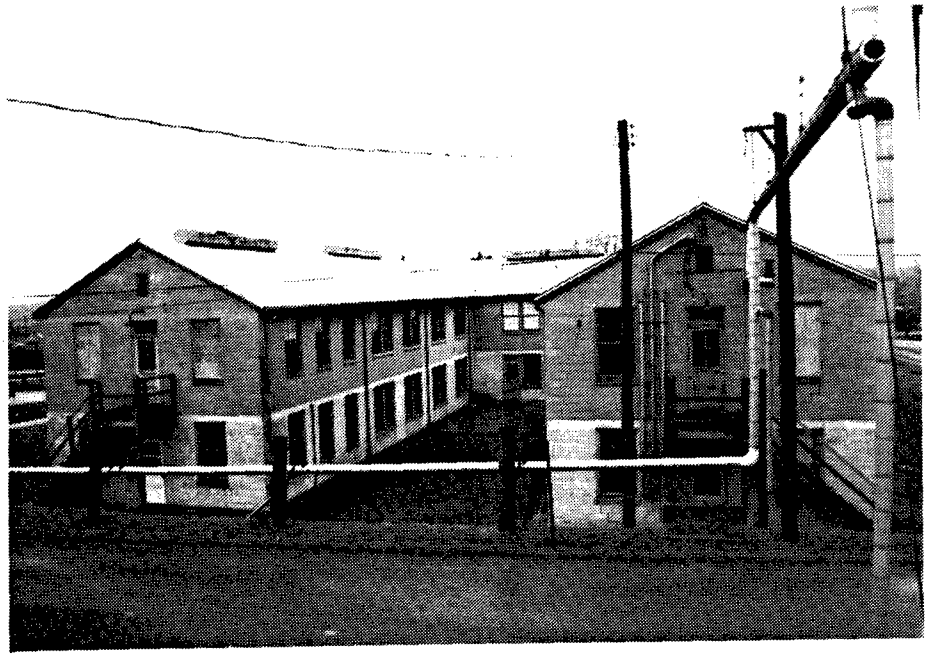

Figure 12. Building 206: Two-story Barracks.

MANUFACTURING AND CHEMICAL PROCESS FACILITIES

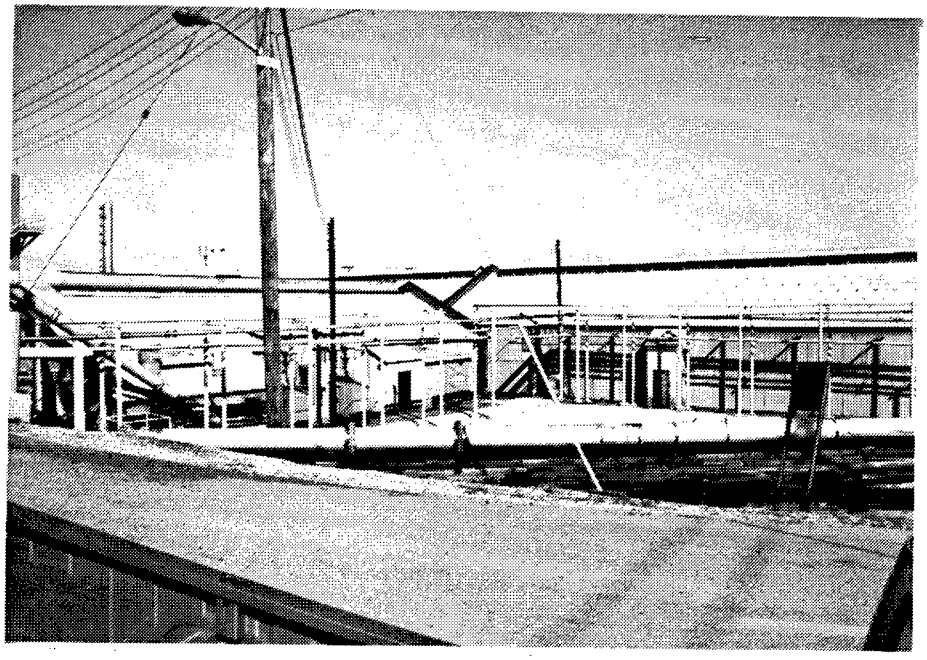

Figure 13. Building 1010: Cotton Dry House and Conveyor Building. In this building, bales of cotton were broken up, dried, and sent to the Nitrating House via the Cotton Dry Conveyor.

Figure 14. Building 2010: This photo reveals a different wing design; otherwise, it is structurally similar to Building 1010 and has spray foam, rather than aluminum siding, on an exterior wall to provide a safer building material and to insulate the building's contents.

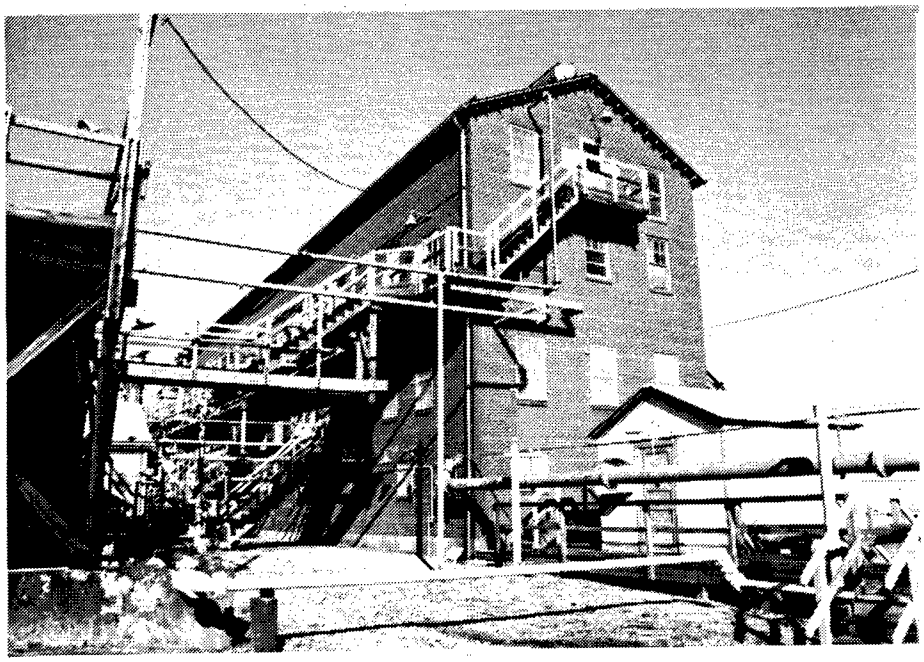

Figure 15. Building 1012: Nitrating House that is four stories and constructed of brick.

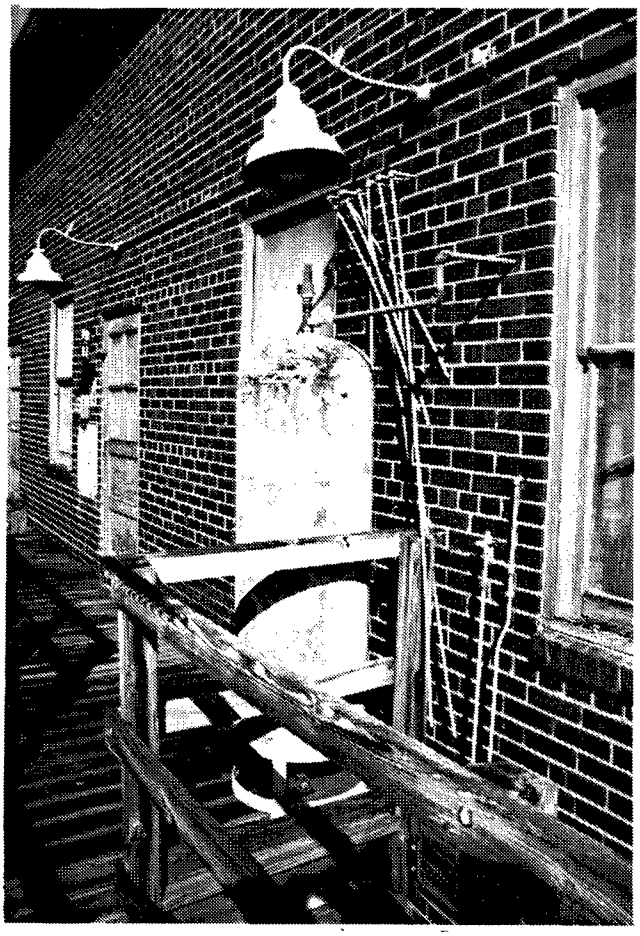

Figure 16. Building 1012: Pressure tank on the fourth floor of this building.

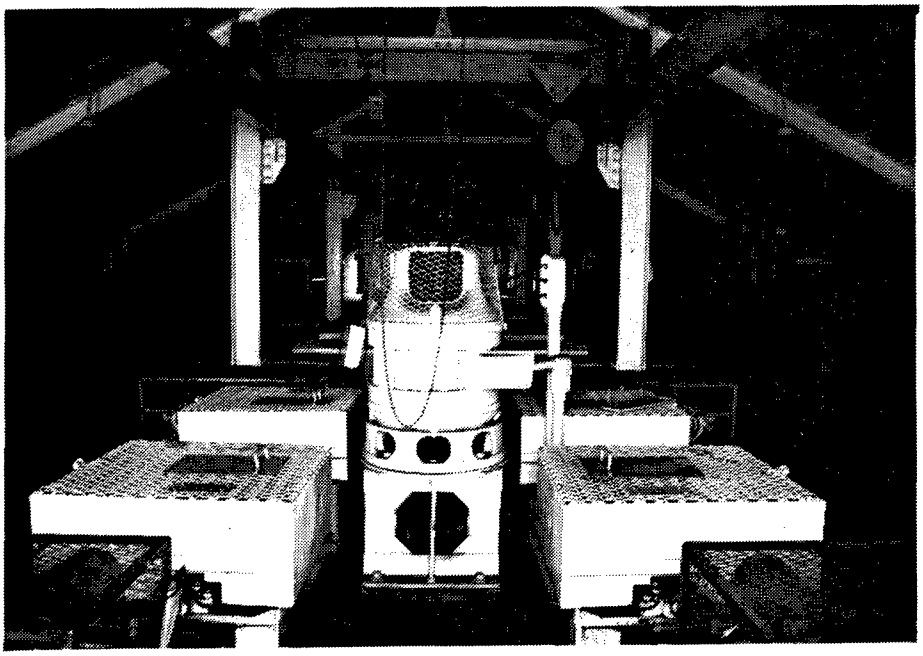

Figure 17. Building 1012: This Wringer drive motor on the fourth floor is surrounded by four dipping pot agitators which are under safety cages.

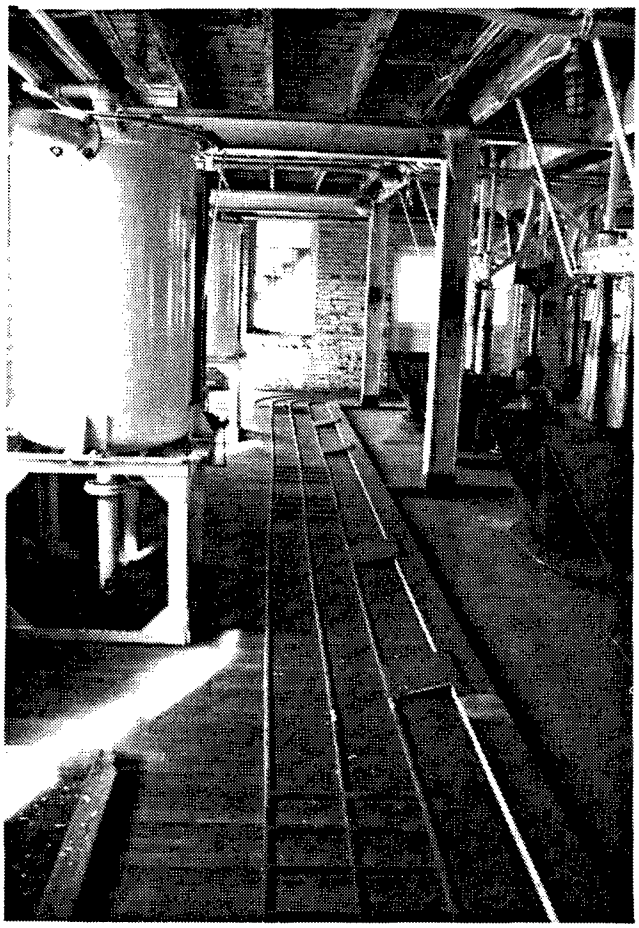

Figure 18. Building 1012: Cotton trolley tracks on the third floor. The trolleys are no longer present; however, they were used to transfer cotton from the Dry Cotton Conveyor to the cotton dipping pots.

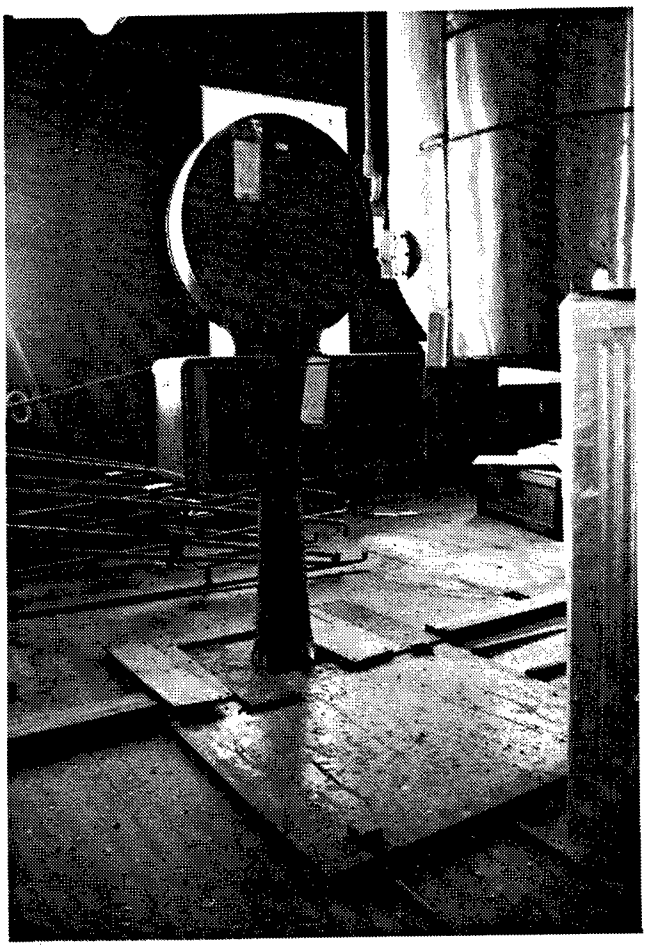

Figure 19. Building 1012: Cotton Scale on the third floor.

Figure 20. Building 1012: Cyclone cotton hopper on the third floor where cotton from the Dry Cotton Conveyor was received.

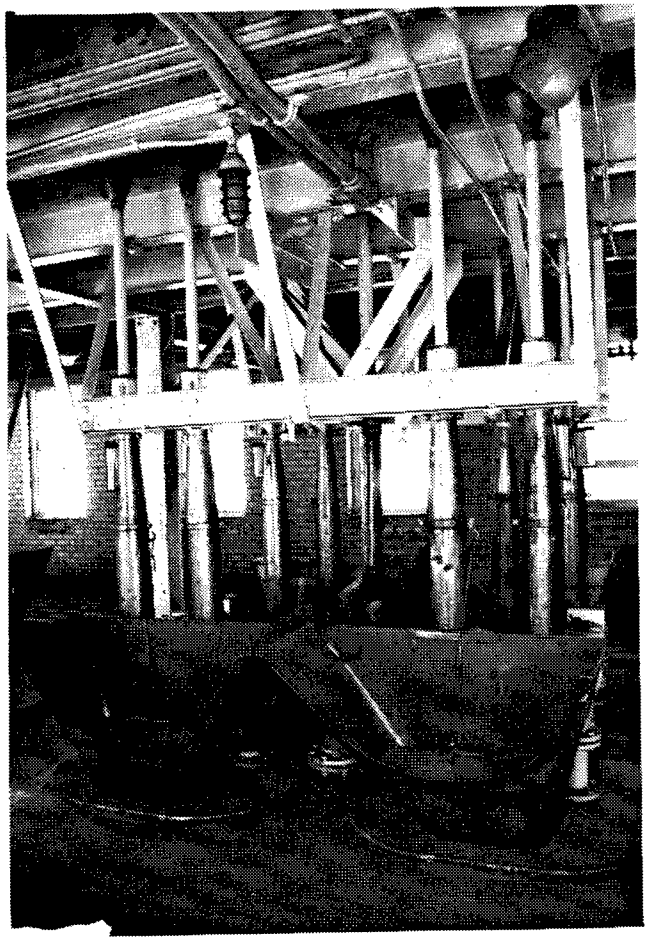

Figure 21. Building 1012: Cotton dipping pot on the third floor where cotton was mixed with acid.

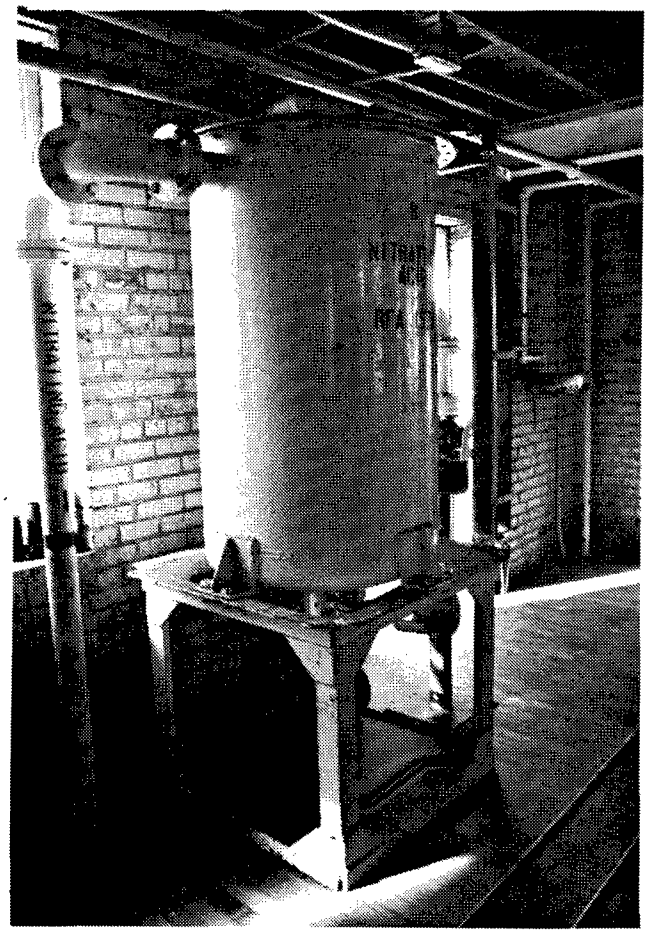

Figure 22. Building 1012: Nitrating acid tank on the third floor.

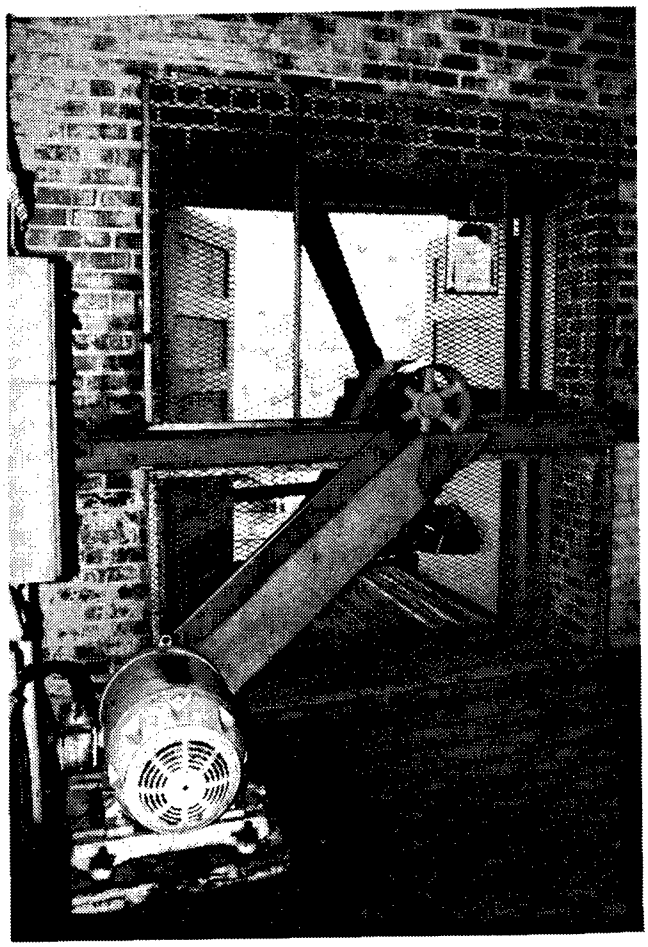

Figure 23. Building 1012: Interior view of the third floor showing a wooden propeller fan with its motor.

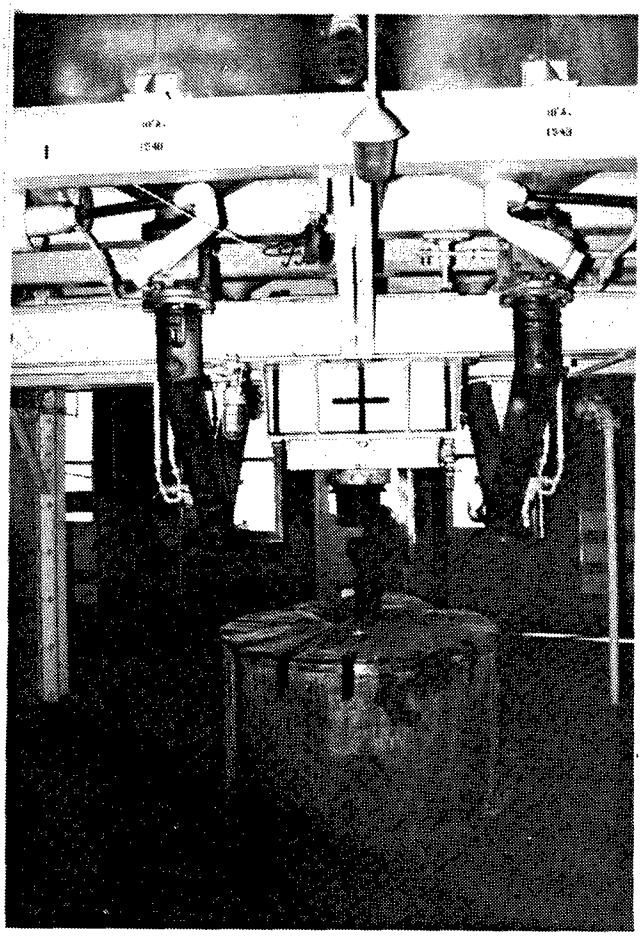

Figure 24. Building 1012: Wringer located on the second floor.

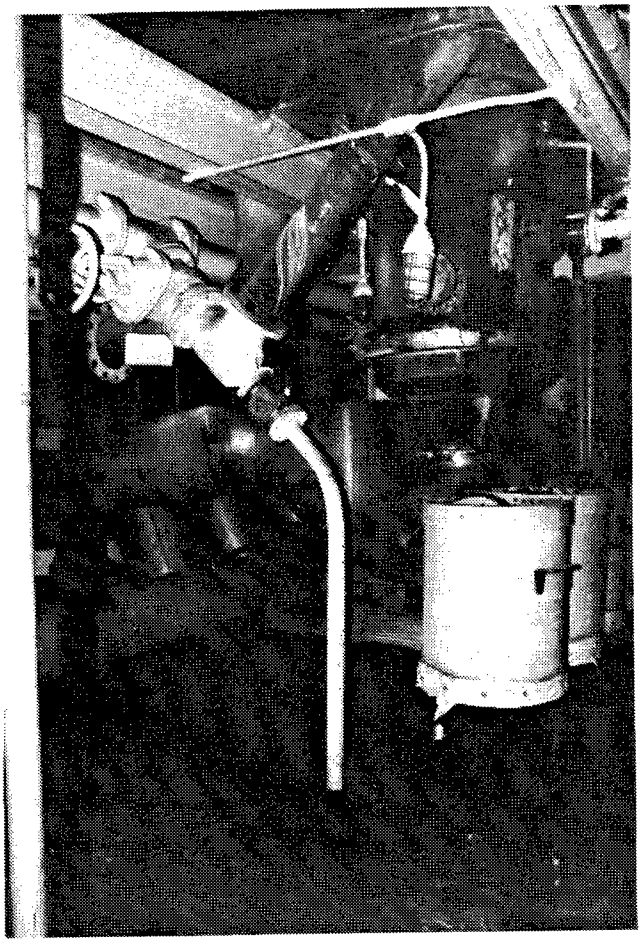

Figure 25. Building 1012: Nitrating equipment and buckets for collection on the first floor.

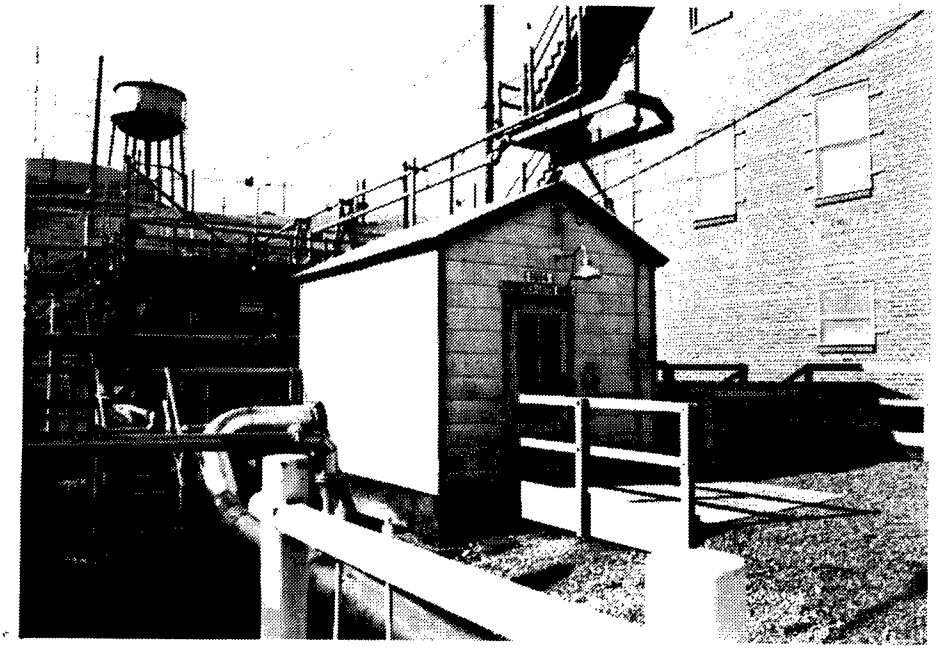

Figure 26. Building 1014: Emergency Catch House.

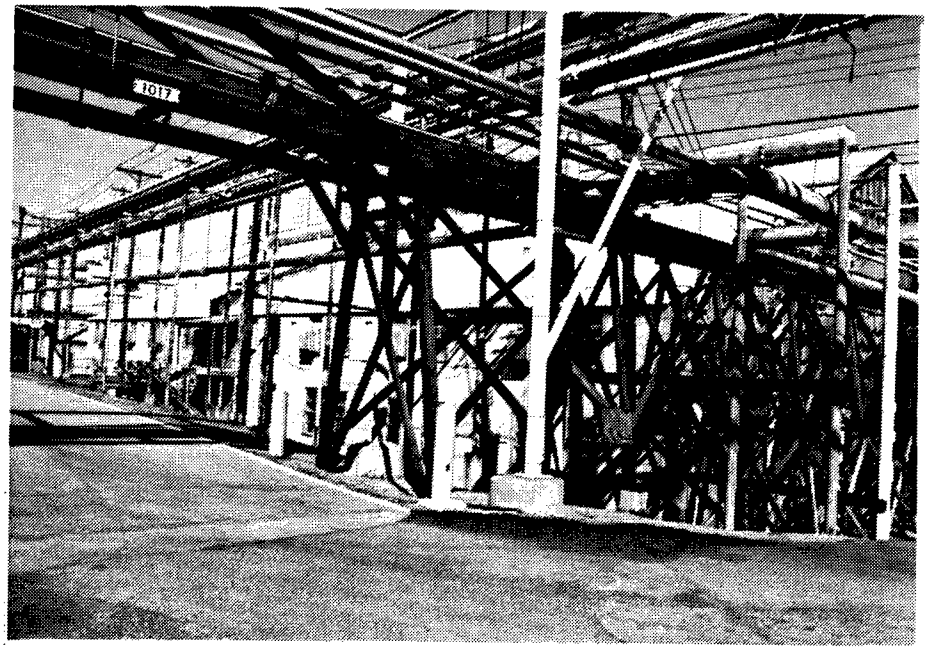

Figure 27. Building 2019: Boiling Tub House.

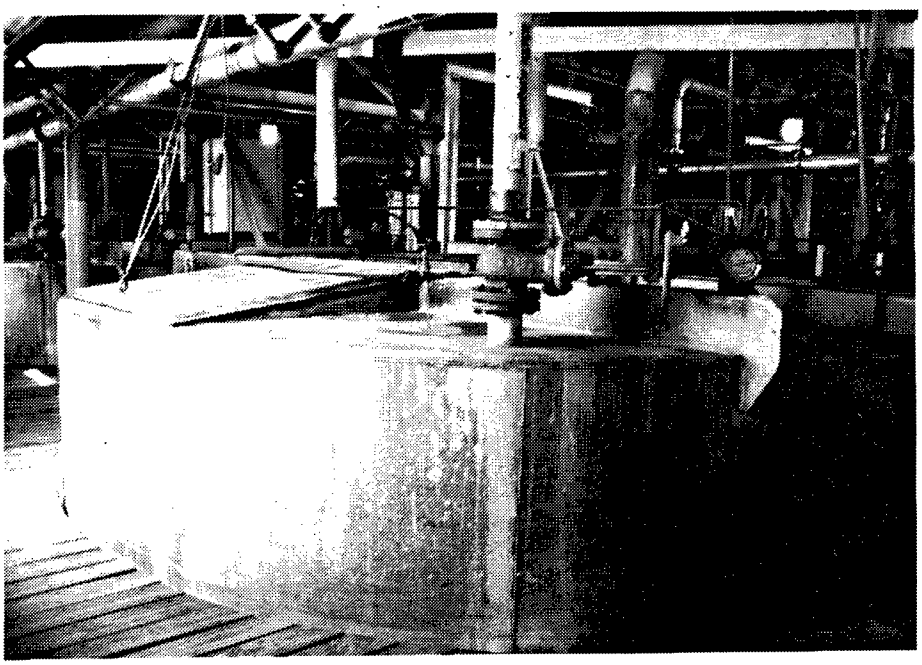

Figure 28. Building 2019: Boiling tub on the second floor of the Boiling Tub House.

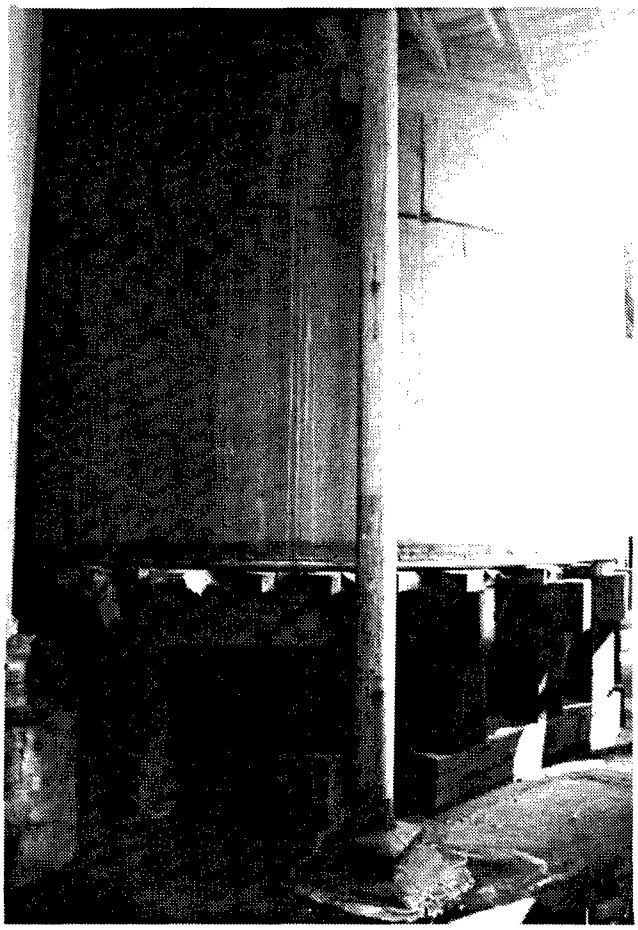

Figure 29. Building 2019: Bottom of a boiling tub on the first floor.

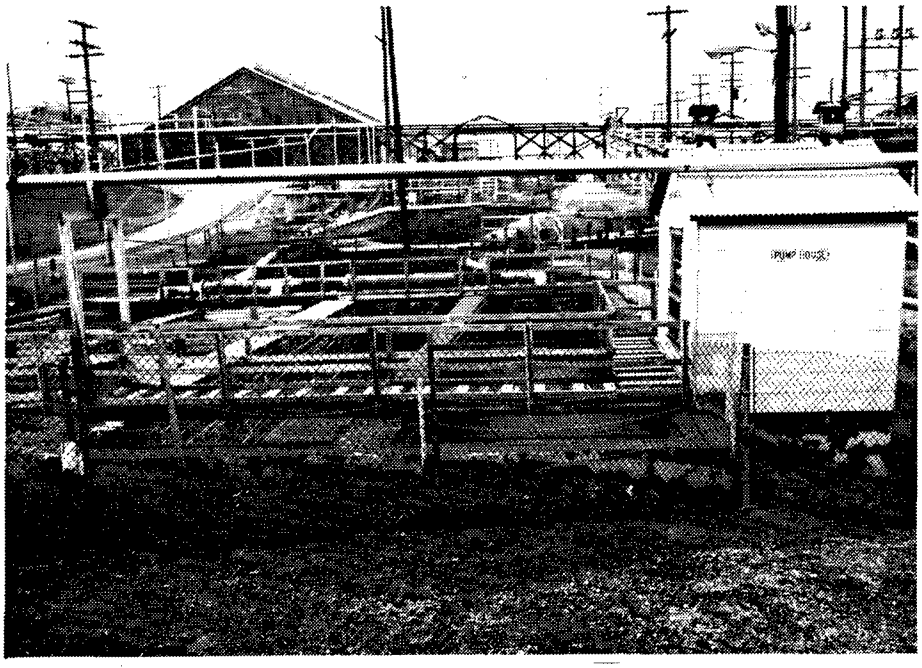

Figure 30. Building 1020: Boiling Tub Settling Pit and Pump House.

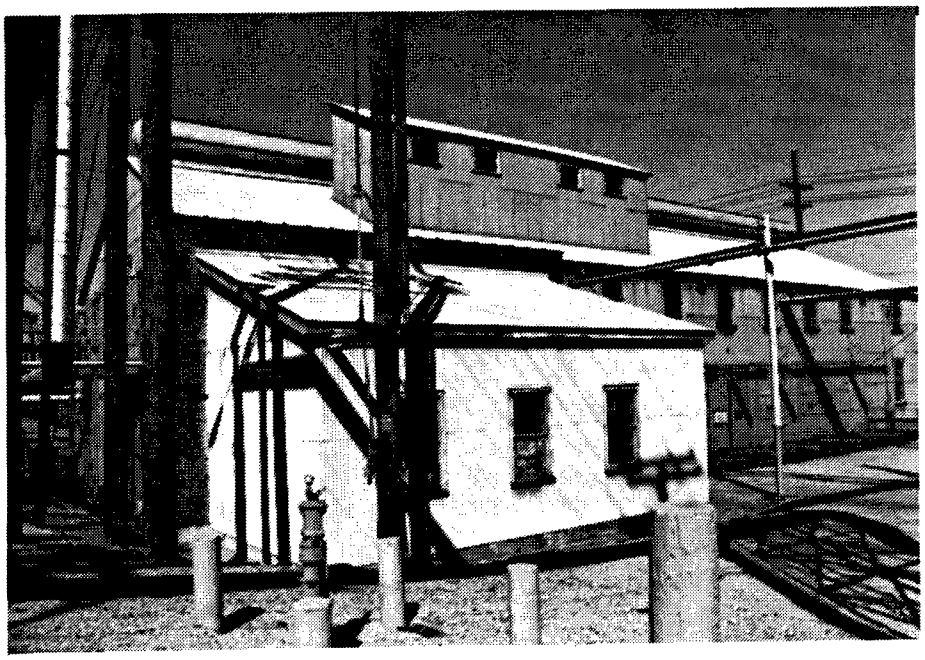

Figure 31. Building 1022: Beater House.

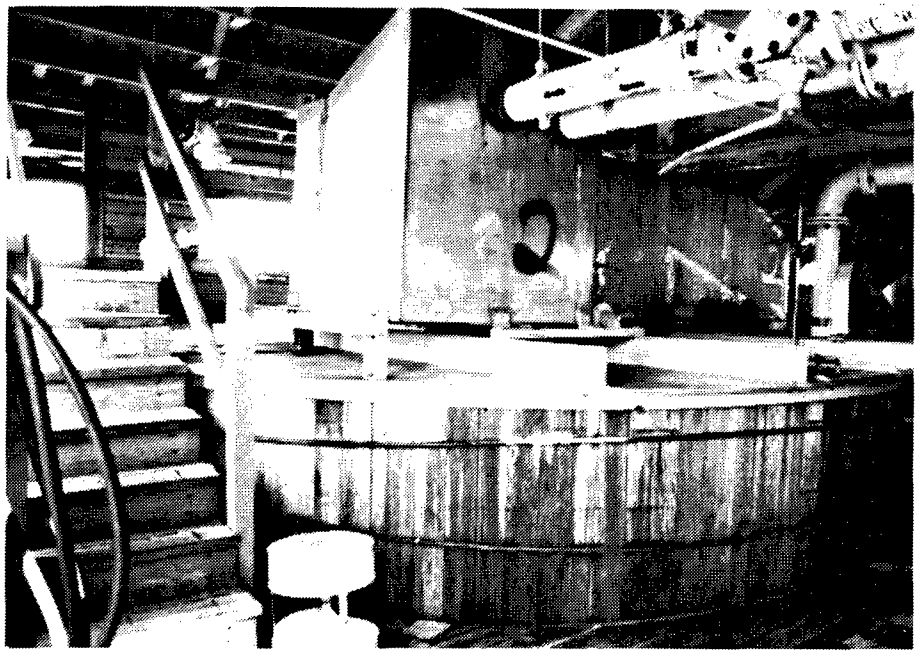

Figure 32. Building 1022: Beater tub on the second floor.

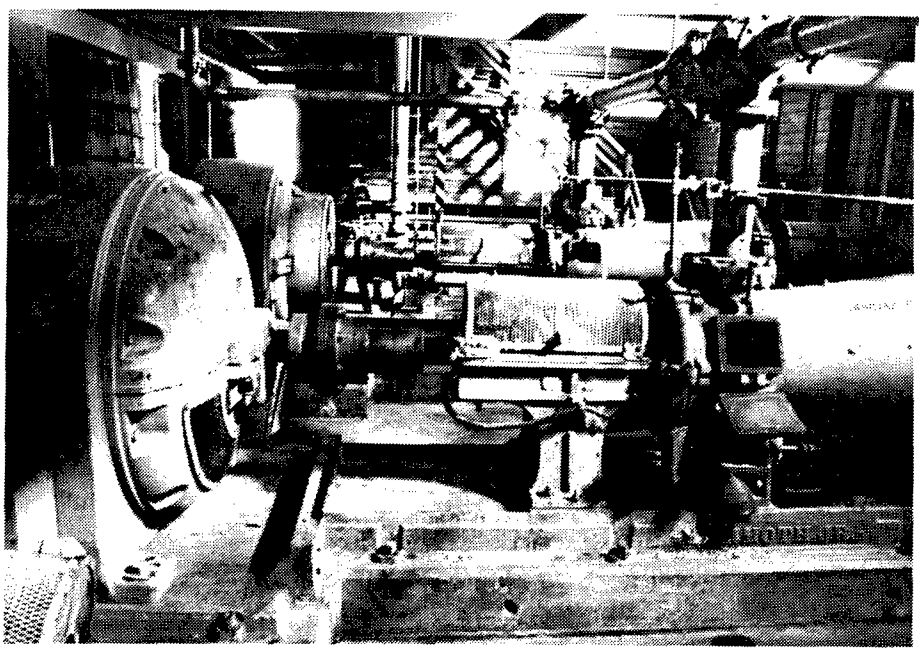

Figure 33. Building 1022: Jordan 6, Mamoth Jr. water pump with an electric motor by General Electric on the first floor.

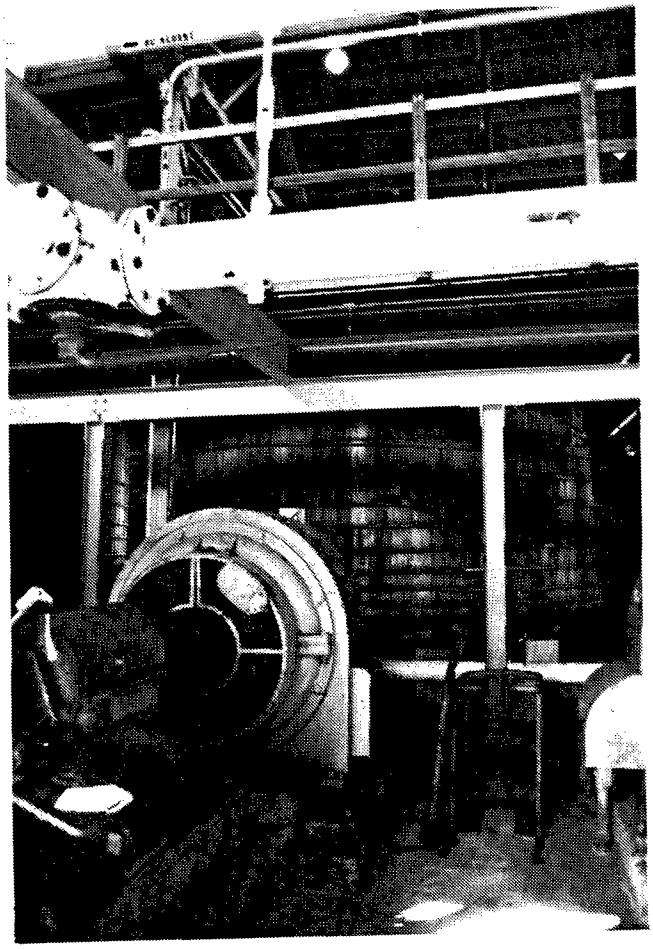

Figure 34. Building 1022: Beater tub and Jordan water pump.

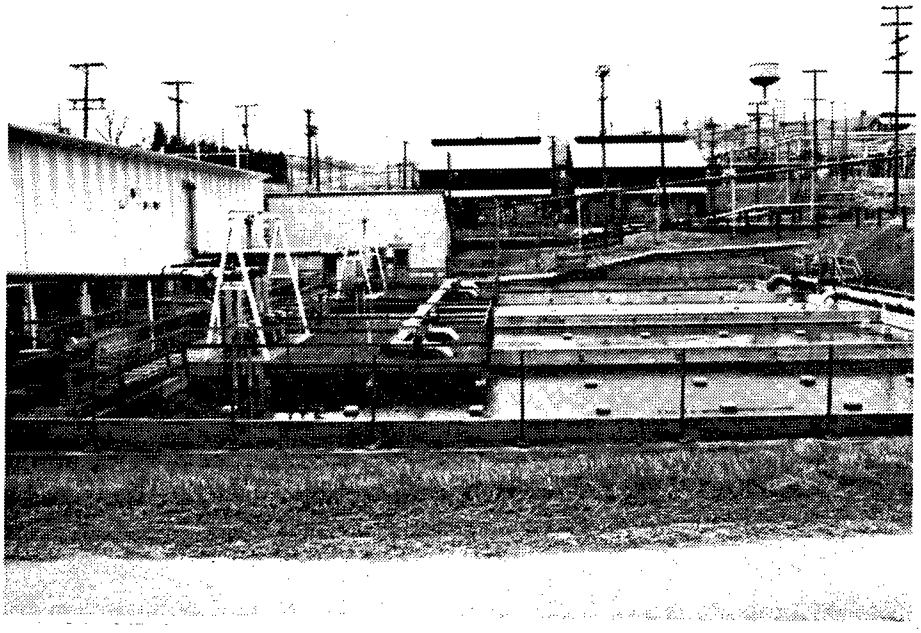

Figure 35. Building 1025: Poacher and Blending Settling Pit Pump House. The large structure on the left is not a part of this building.

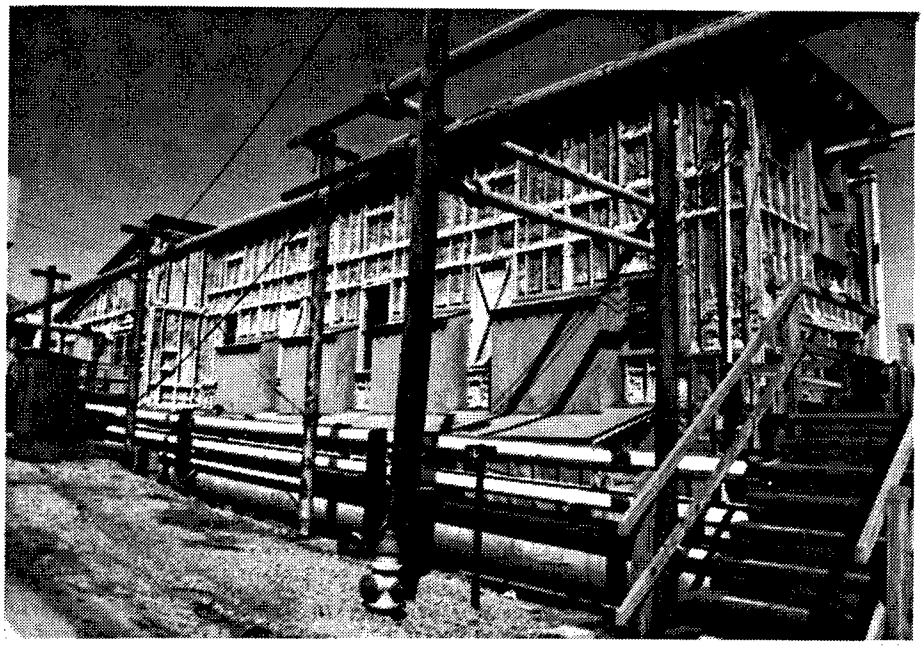

Figure 36. Building 2026: Final Wringer House.

Figure 37. Building 2026: Cotton buckets on the first floor.

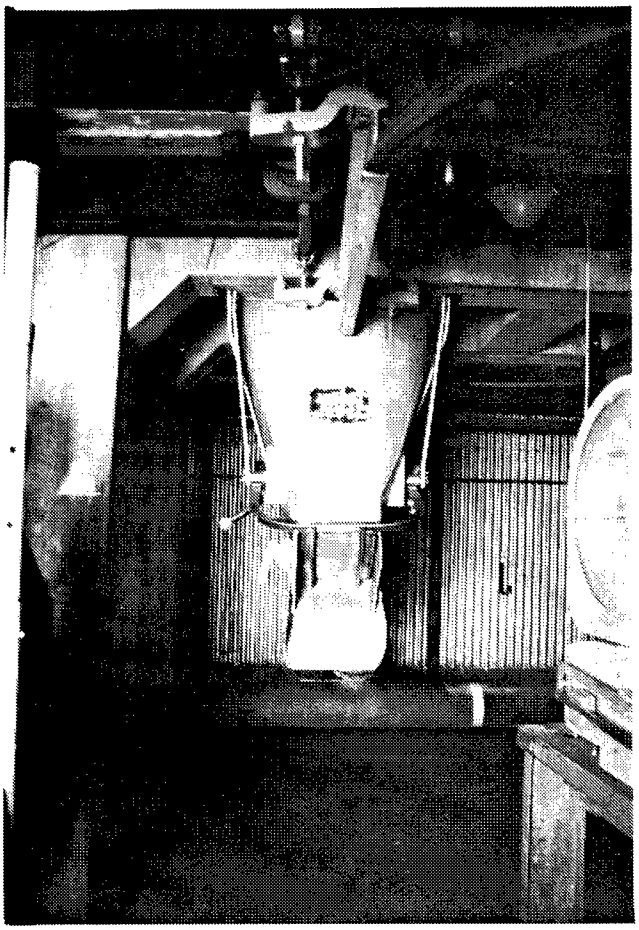

Figure 38. Building 2026: Chute from wringer on the first floor where cotton was dispensed and then received by the cotton buckets. Note the track on which the buckets were maneuvered.

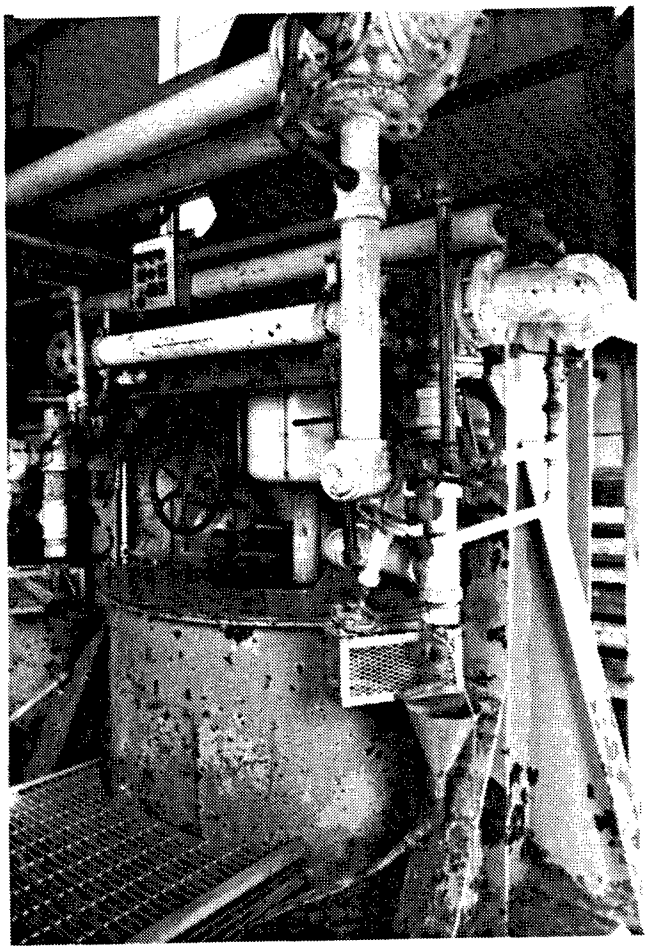

Figure 39. Building 2026: Wringer inside this Final Wringer House manufactured by American Machine and Metal, Incorporated, Ameslan, Illinois.

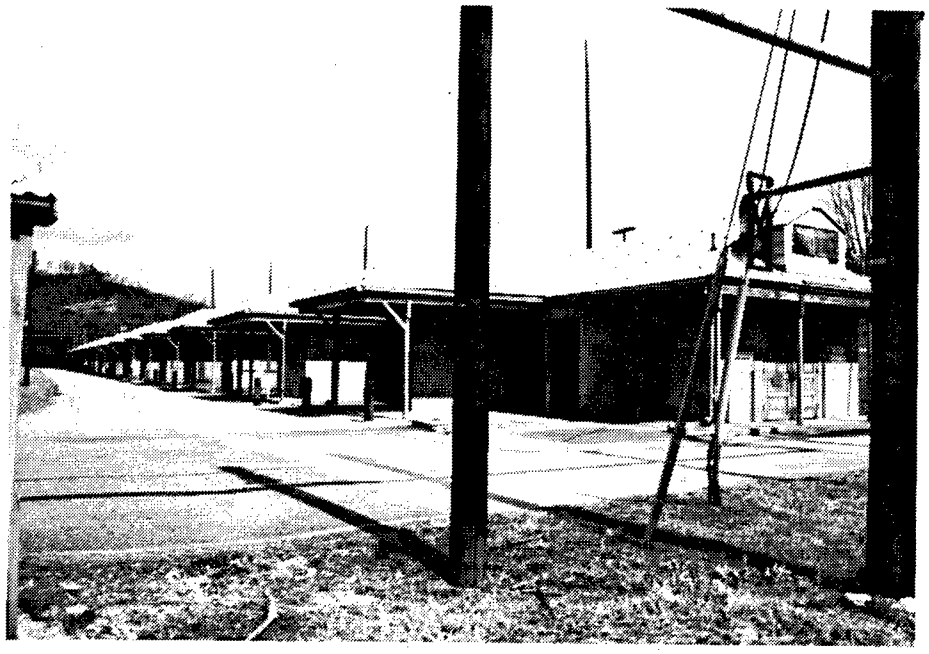

Figure 40. Building 7800: Extruded Grain Finishing House.

Figure 41. Building 3524: Chemical Grind House.

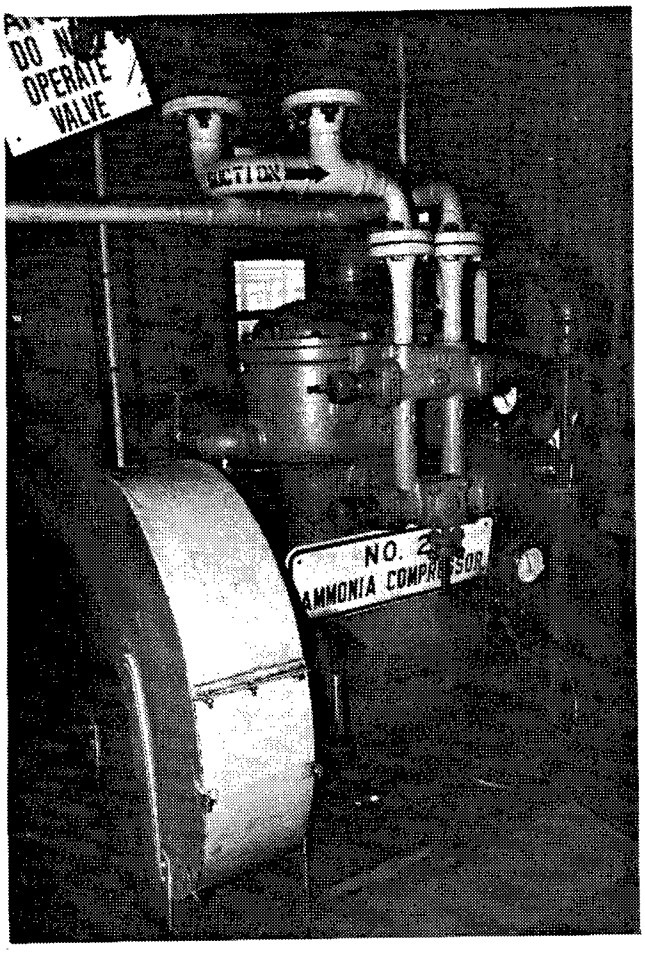

Figure 42. Building 713: Frick ammonia compressor in this Ammonia Compressor House.

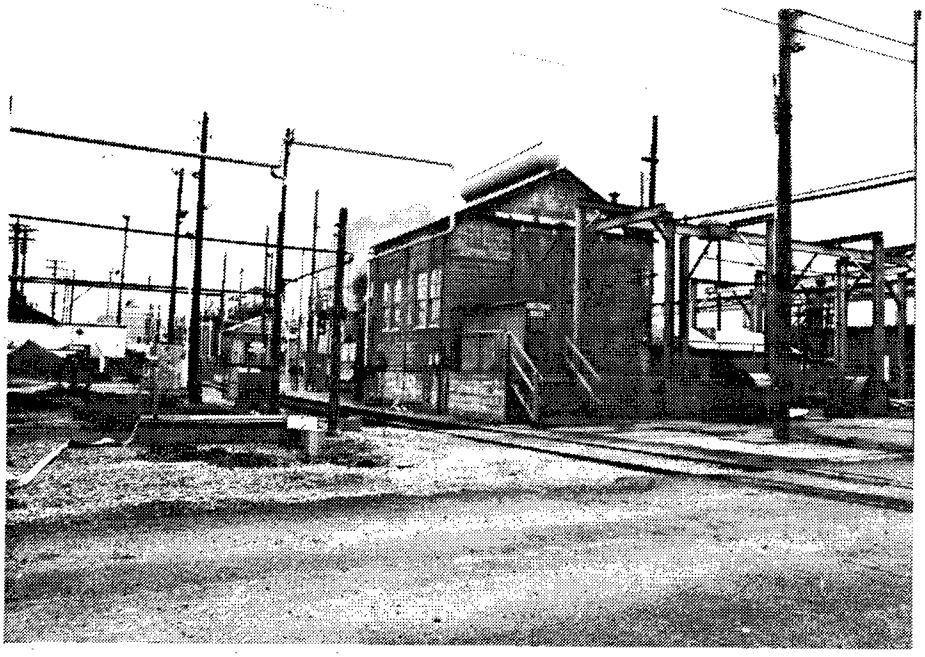

Figure 43. Building 4718: Lead Burner House.

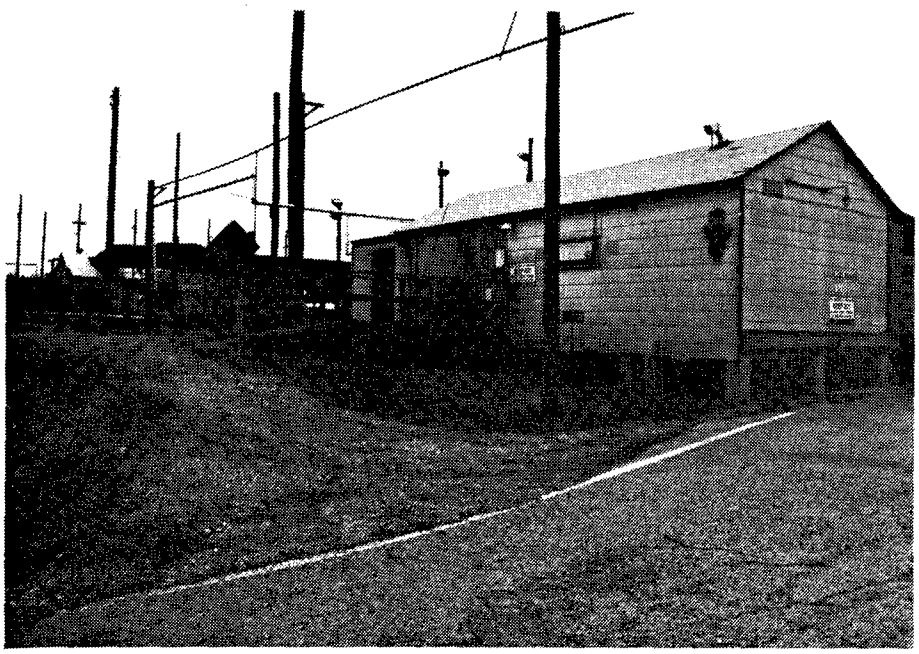

Figure 44. Building 3650: Cotton Store Mix House.

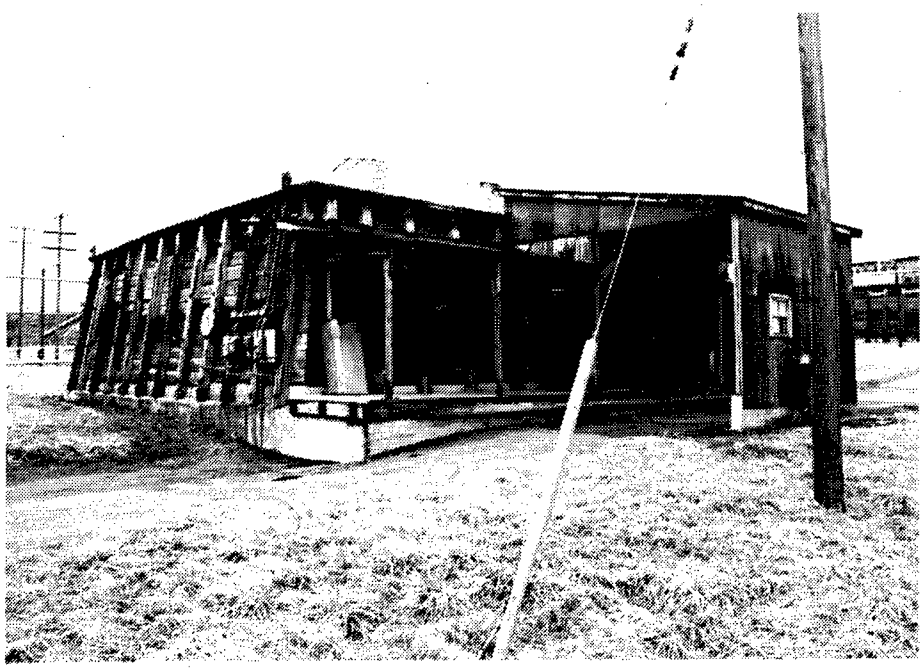

Figure 45. Building 1702: Originally a Tray House for the "A" Finishing Area.

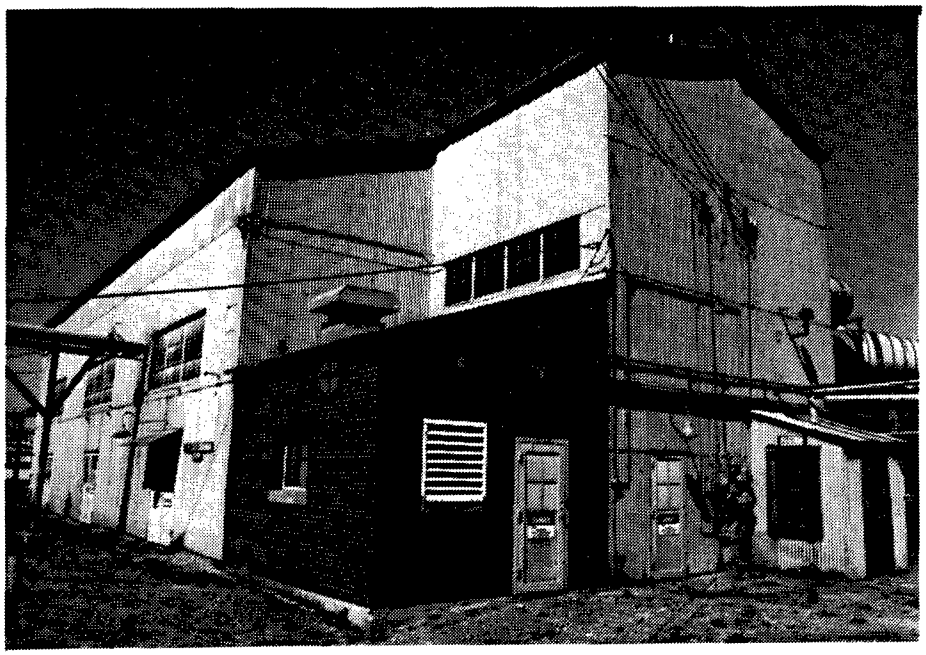

Figure 46. Building 1555: Activated Carbon and Recovery House.

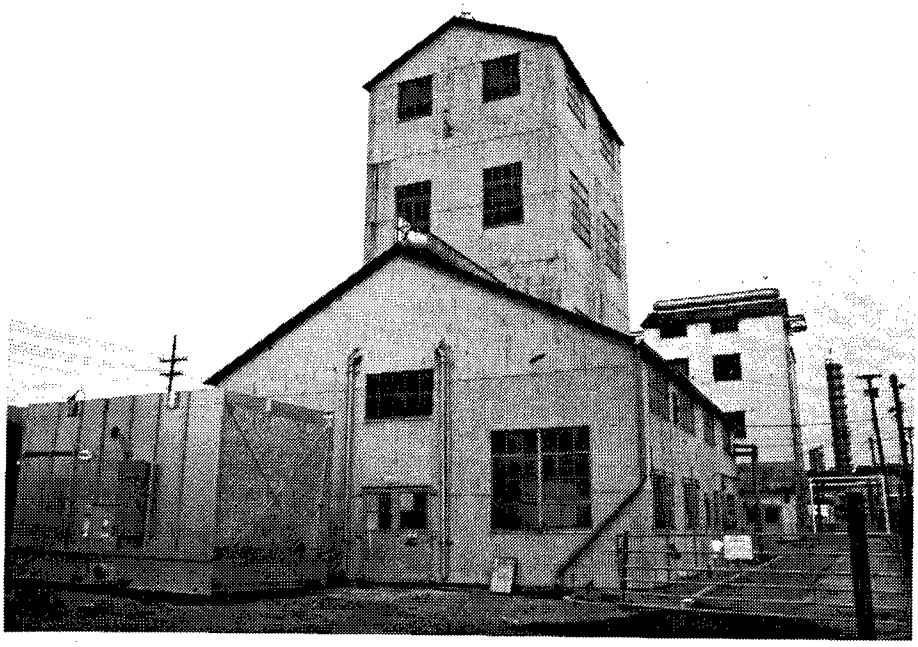

Figure 47. Building 2502: Ether Still House #2.

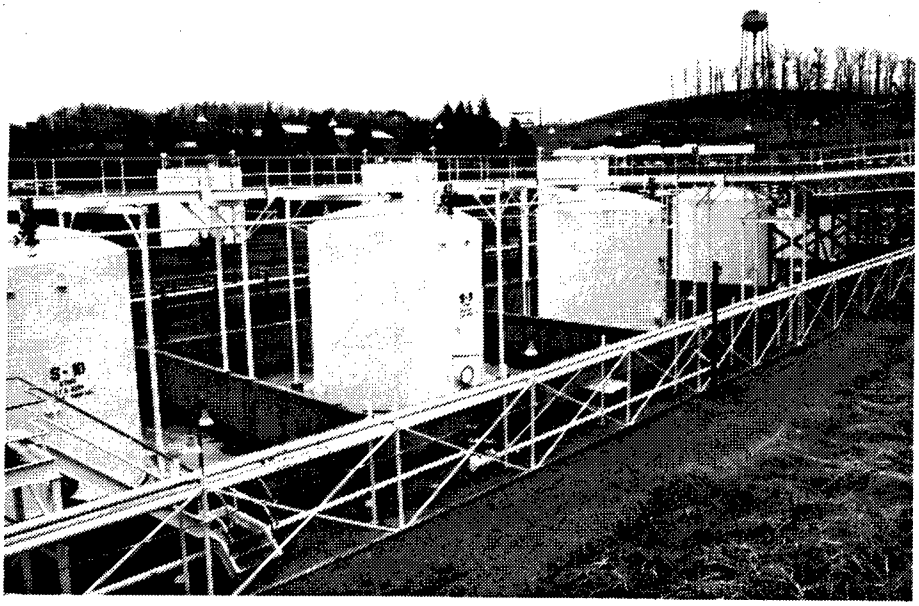

Figure 48. Building 1546: Ether Storage Tanks.

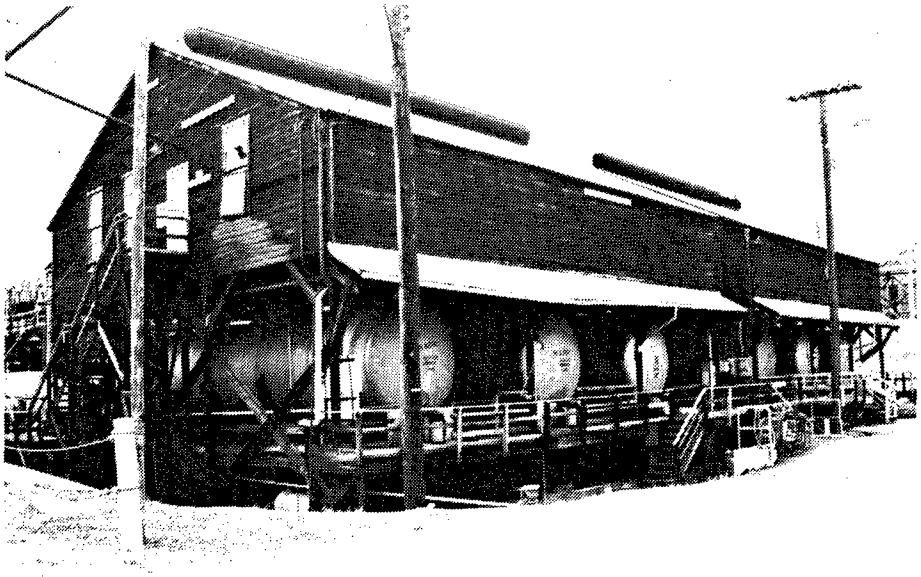

Figure 49. Building 1002: Acid storage tanks at the Acid Mix and Weigh House.

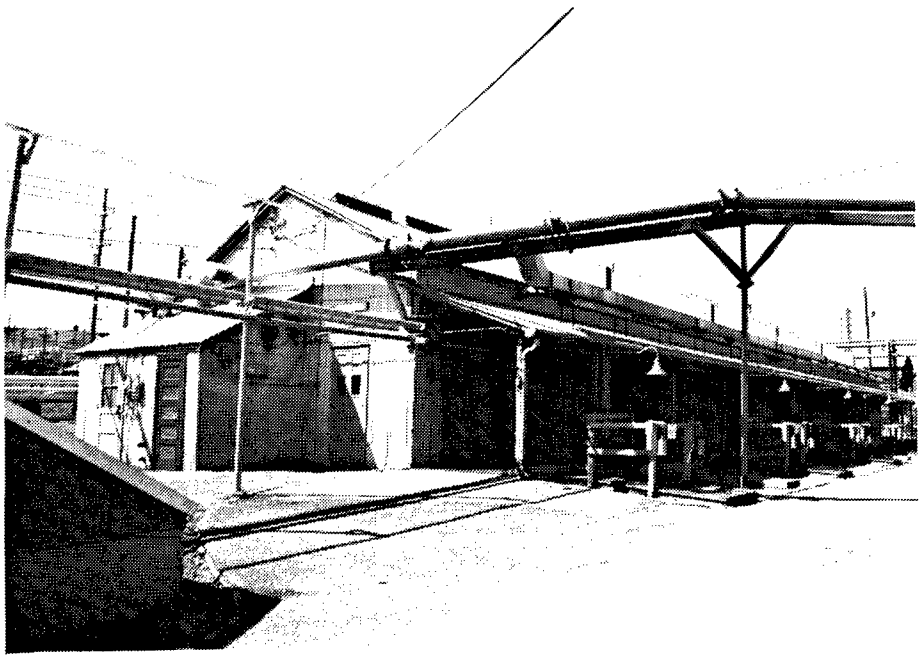

Figure 50. Building 1500: Dehydration Press House.

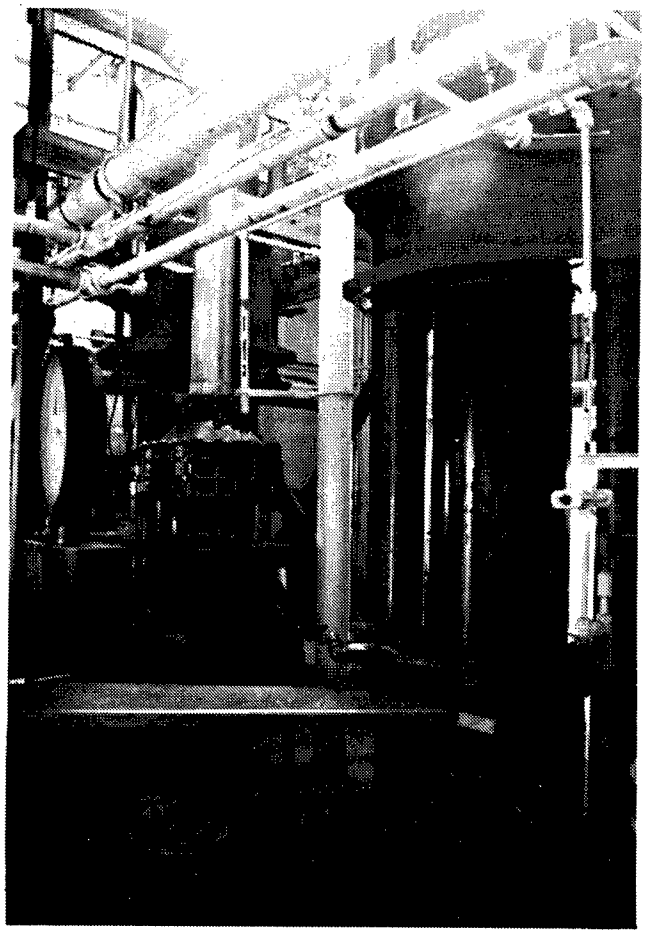

Figure 51. Building 1500: Dehydration vertical press manufactured by Wood on the first floor.

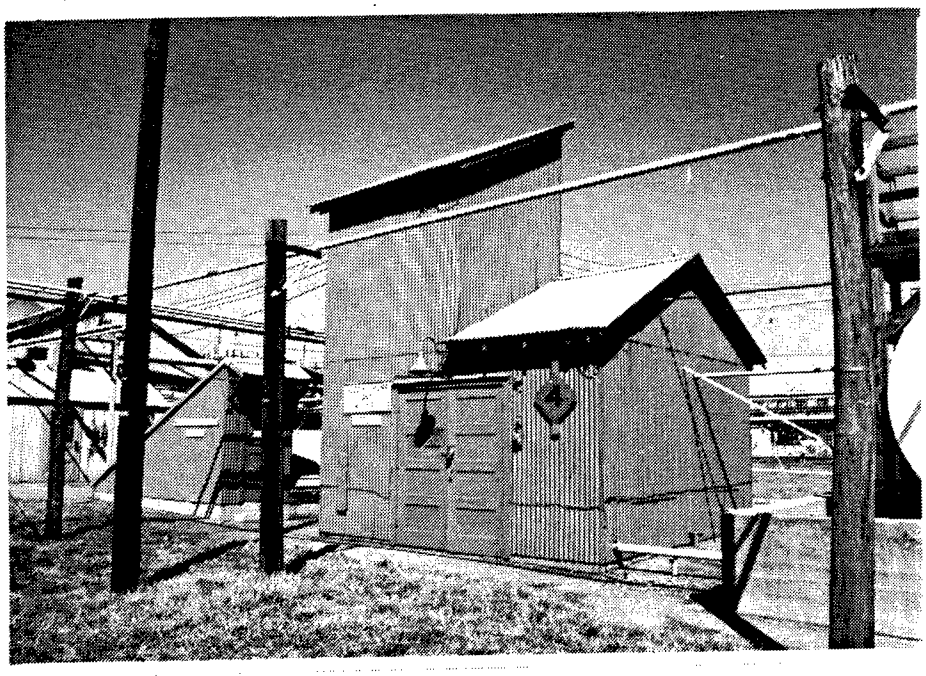

Figure 52. Building 1501: Alcohol Pump and Accumulator House that served as the alcohol supply house for a Dehydration Press House.

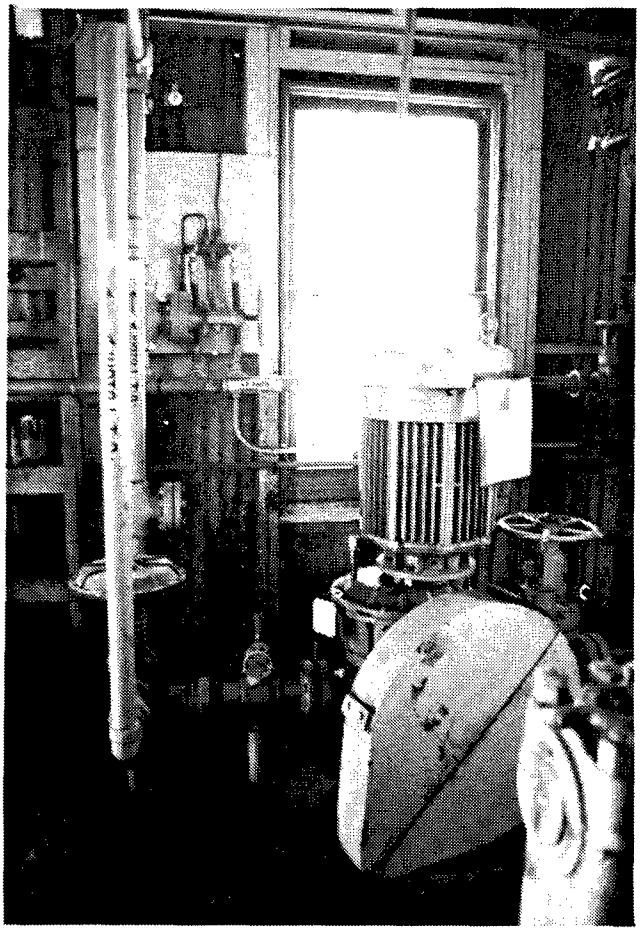

Figure 53. Building 1501: Alcohol Accumulator Pump.

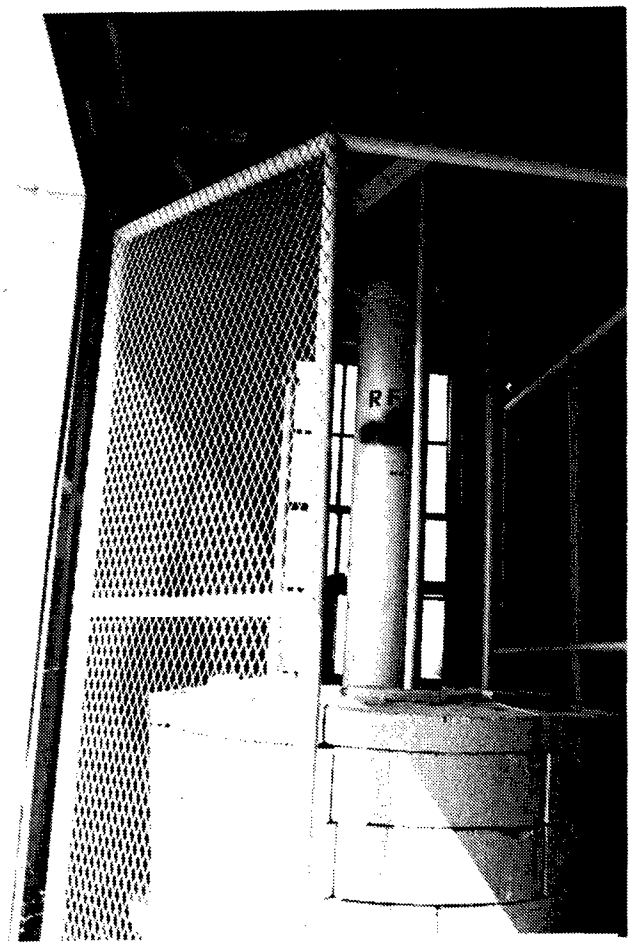

Figure 54. Building 1501: Alcohol accumulator counter manufactured by Watson-Stillman Company, Rosile, New Jersey, with the weight partially disassembled.

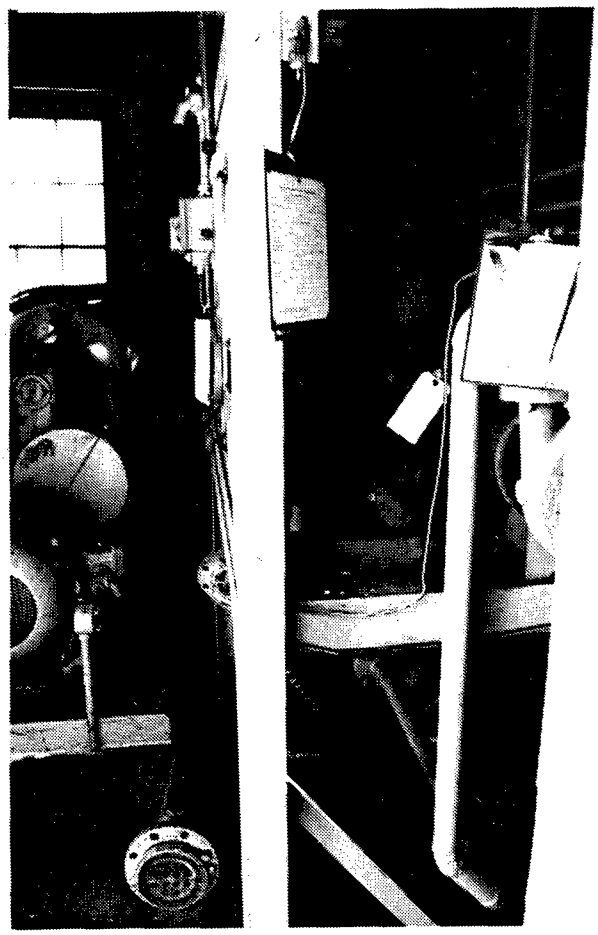

Figure 55. Building 1501: Heat reclaiming unit with temperature monitoring controls and a circulating pump with a 1.5 horsepower motor.

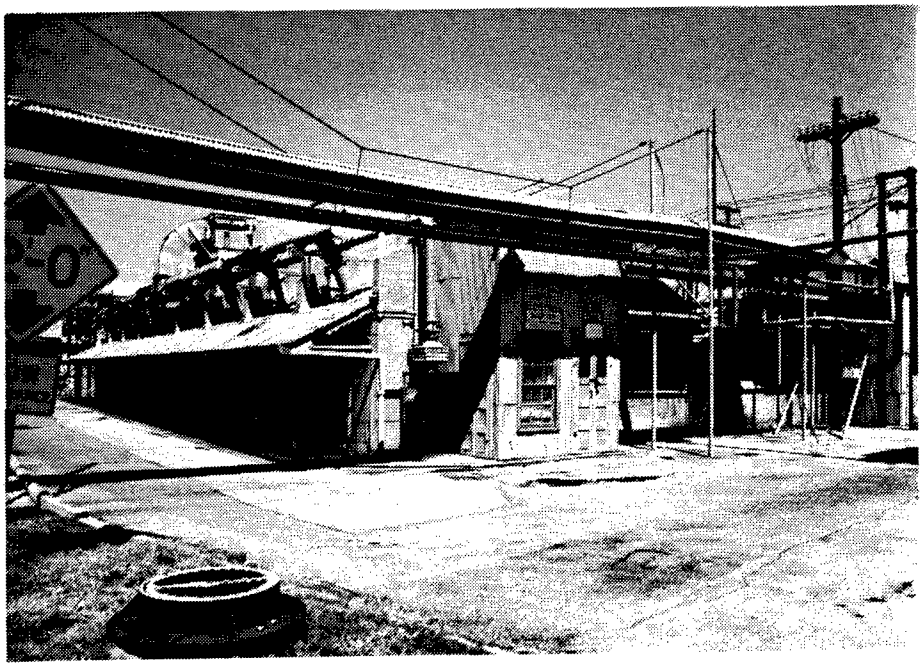

Figure 56. Building 1508: Mix House with an uncovered walkway connecting the two halves of this Mix House. Each half contains eight bays.

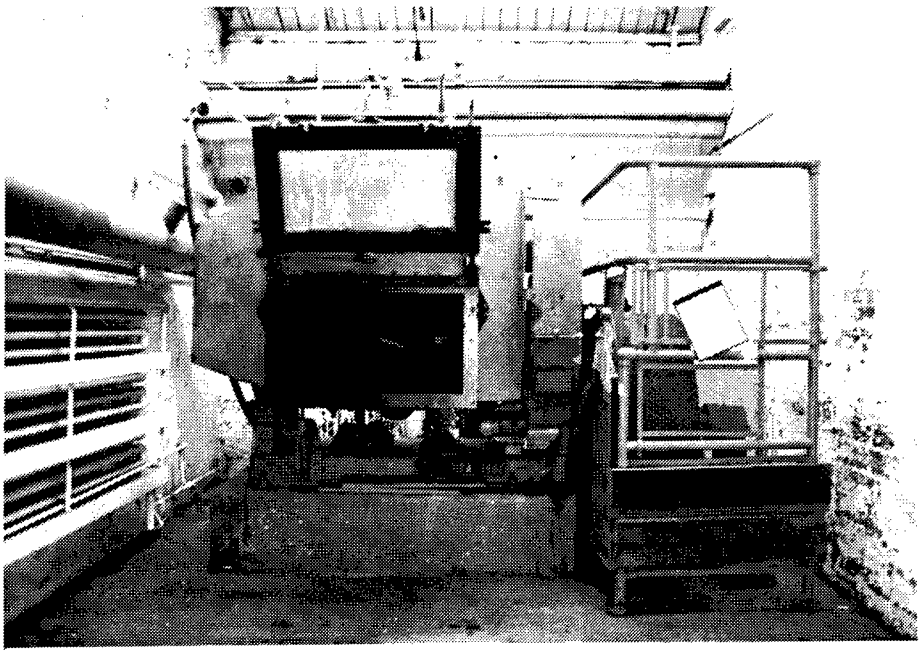

Figure 57. Building 1508: Mixer that is basically a brine-cooled tank, with blades that "knead" the nitrocellulose.

Figure 58. Building 1508: Macerator that improved the colloid consistency and reduced solvent evaporation.

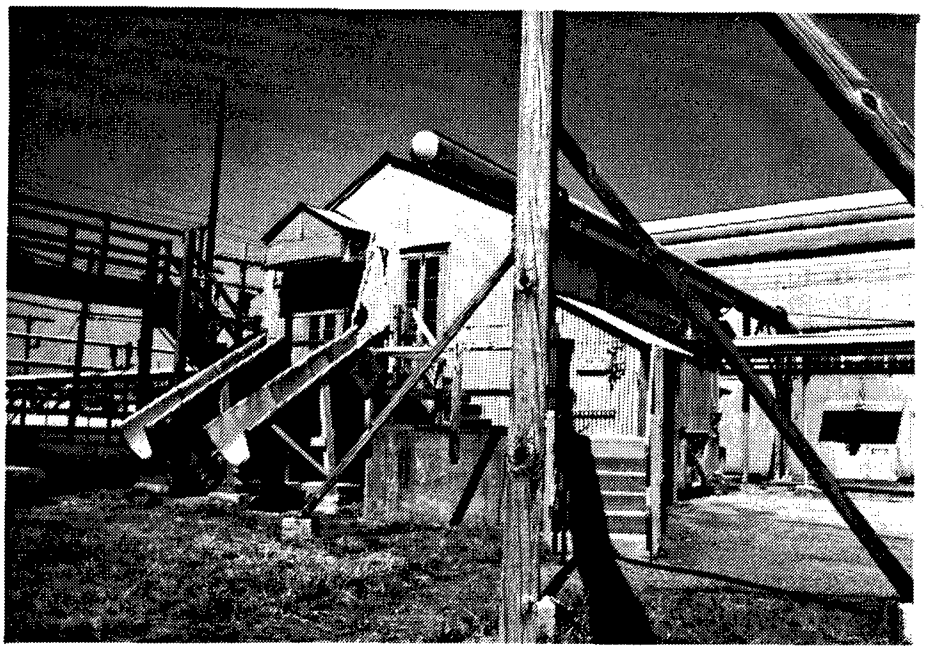

Figure 59. Building 1506: Diphenylamine Mix House. Note the slides that provided a quick escape route in case of an explosion.

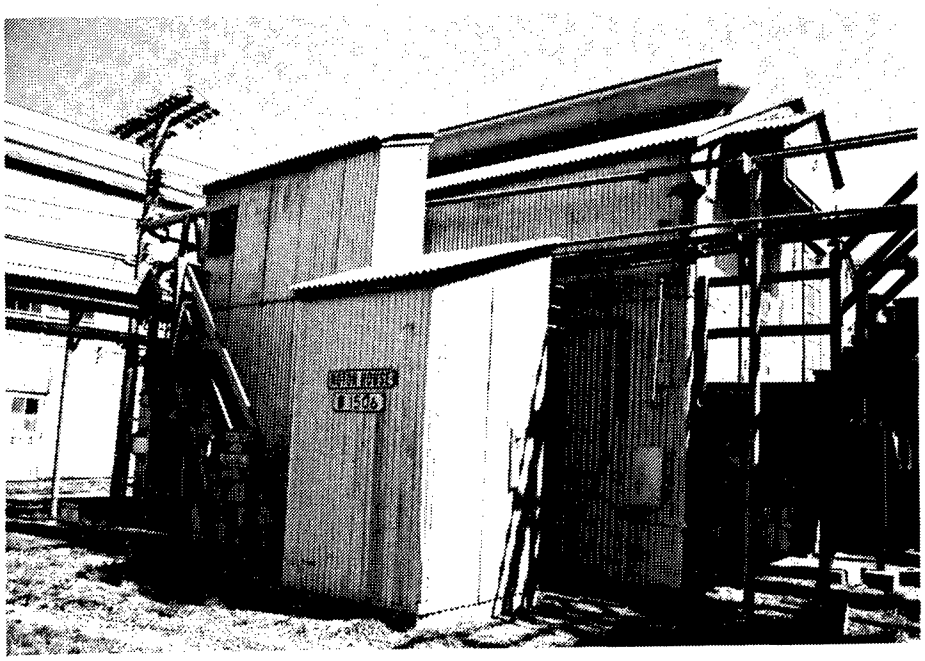

Figure 60. Building 1506B: Motor House of the Diphenylamine Mix House. This photograph is of two separate buildings; the building in the front contains the belts (upstairs and to the left) and motor (first level and to the right) that drove the mixer in the Diphenylamine Mix House.

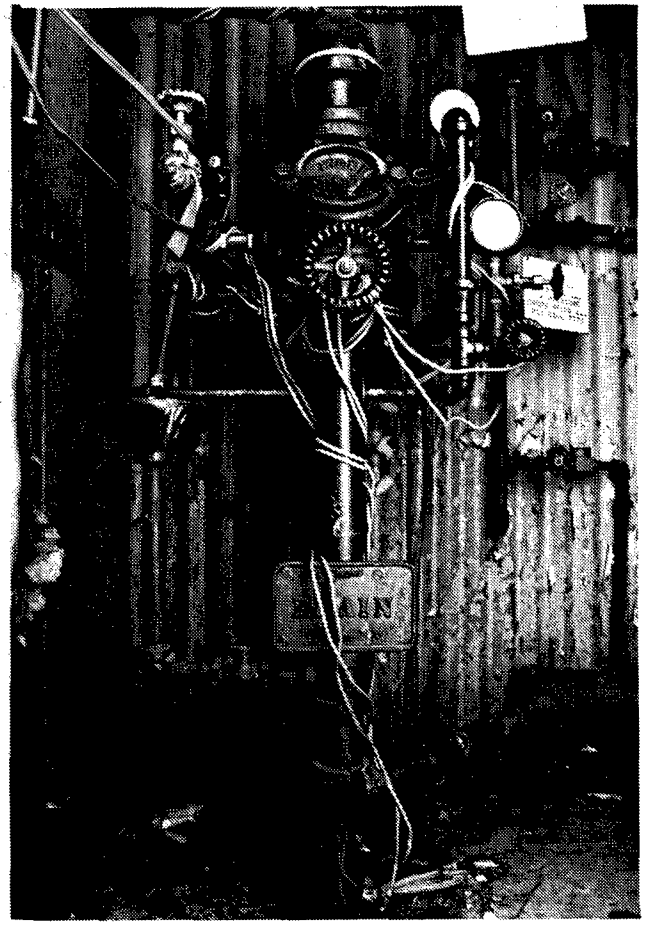

Figure 61. Building 1506: Sprinkler Valve Houses are a common feature on many plant structures and serve as a source of fire suppression.

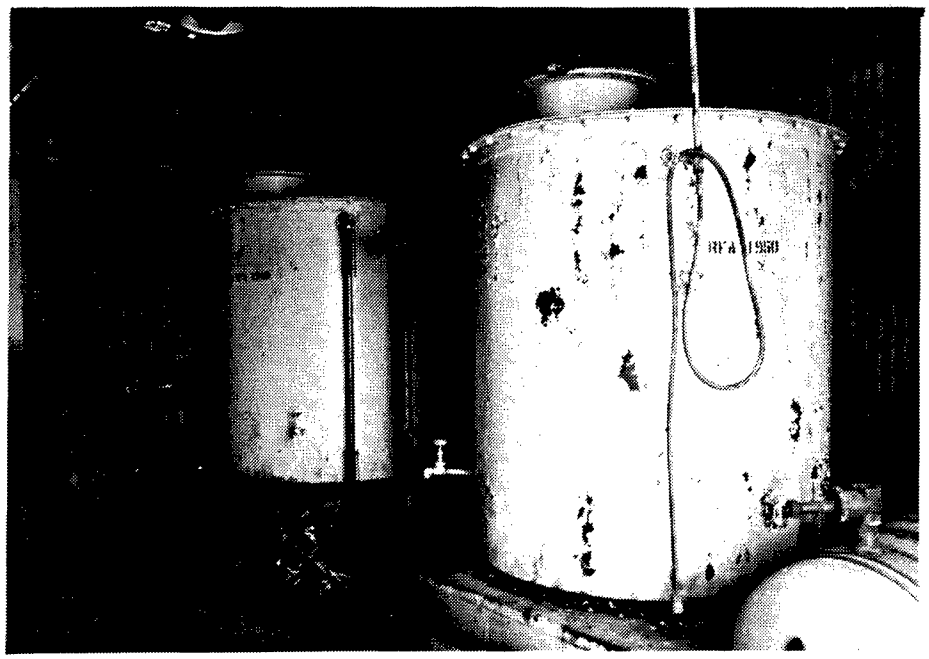

Figure 62. Building 1506: Diphenylamine (DPA) storage tank.

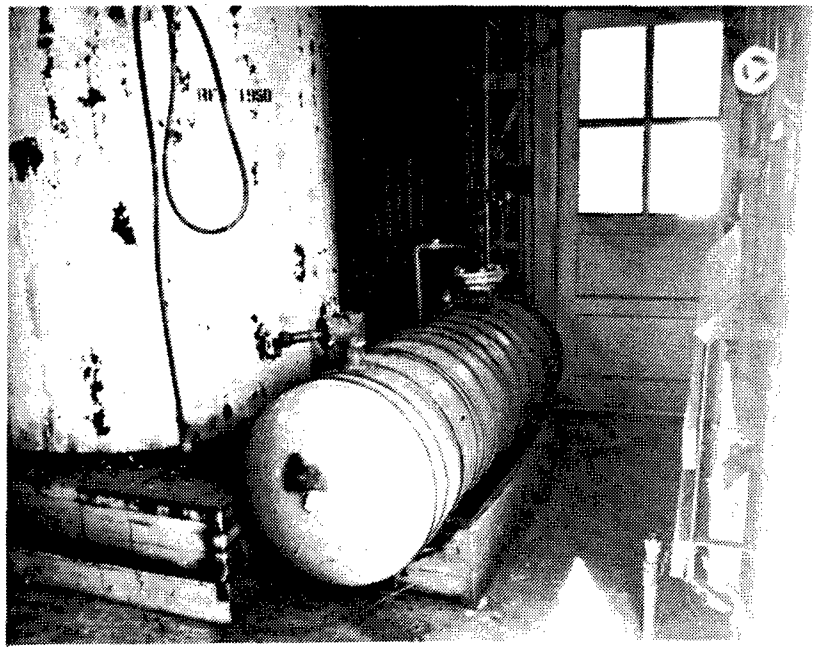

Figure 63. Building 1506: Pressure tank manufactured in 1945 by Staife of Oakmont, Pennsylvania.

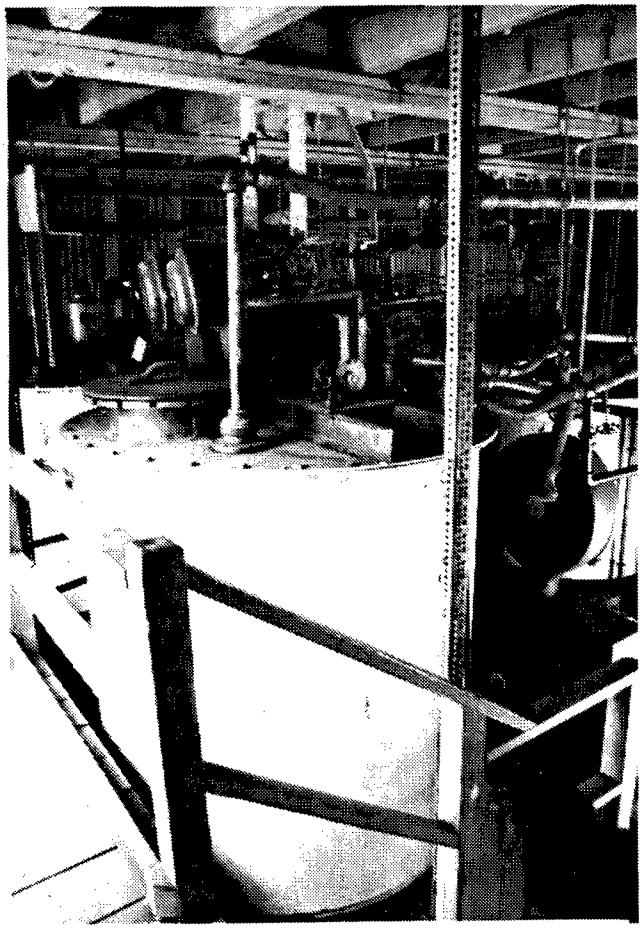

Figure 64. Building 1506: Mix tank with scale in background.

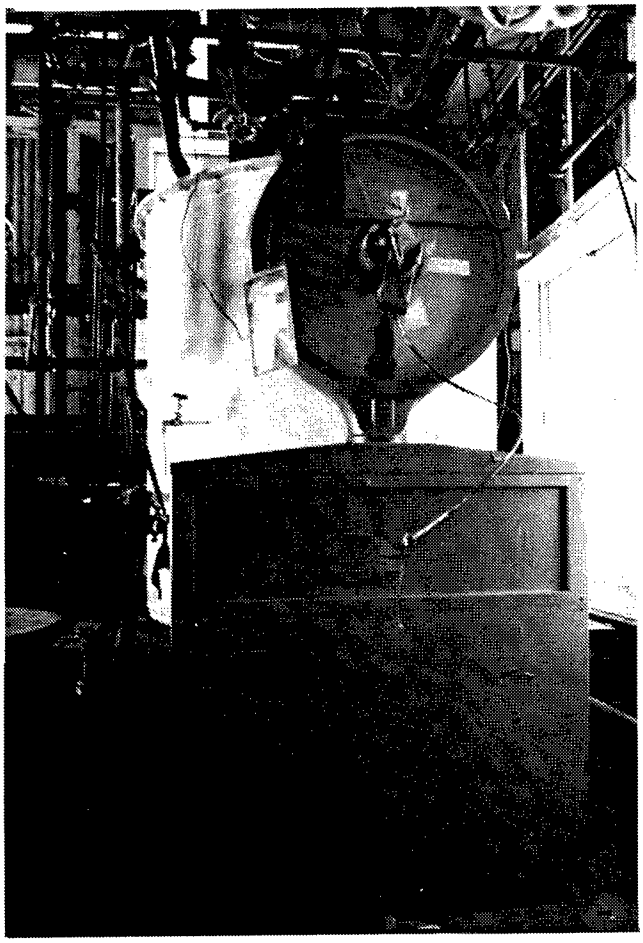

Figure 65. Building 1506: Howe-Richardson scale.

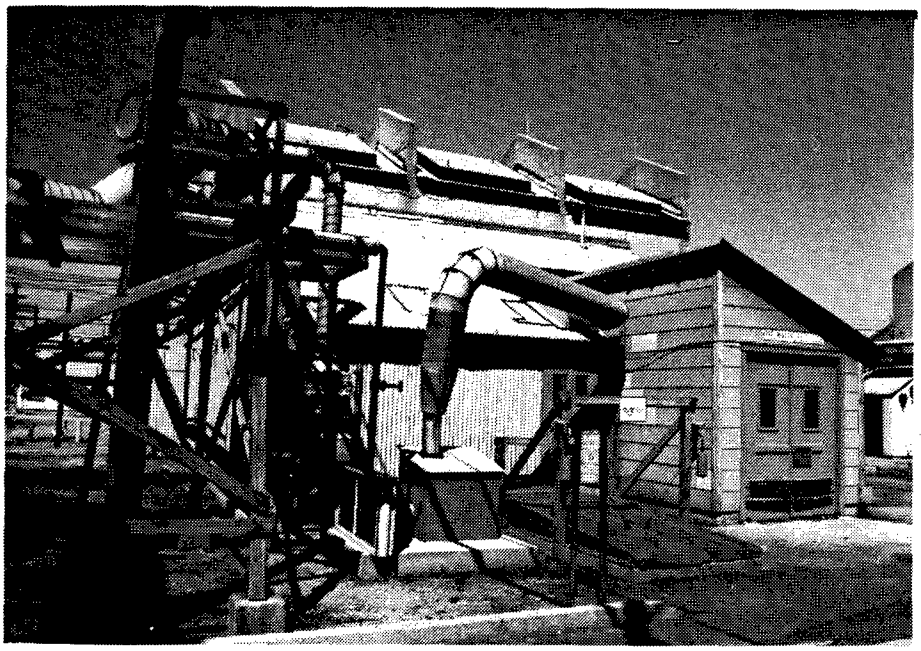

Figure 66. Building 1511: Block Press House.

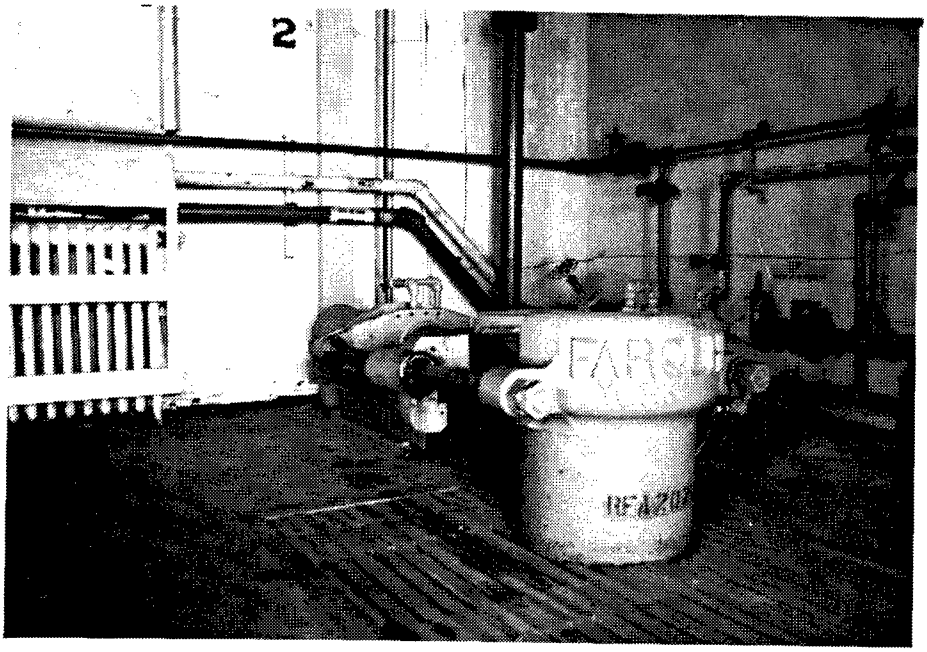

Figure 67. Building 1511: Vertical blocking press by Farquar-York Company.

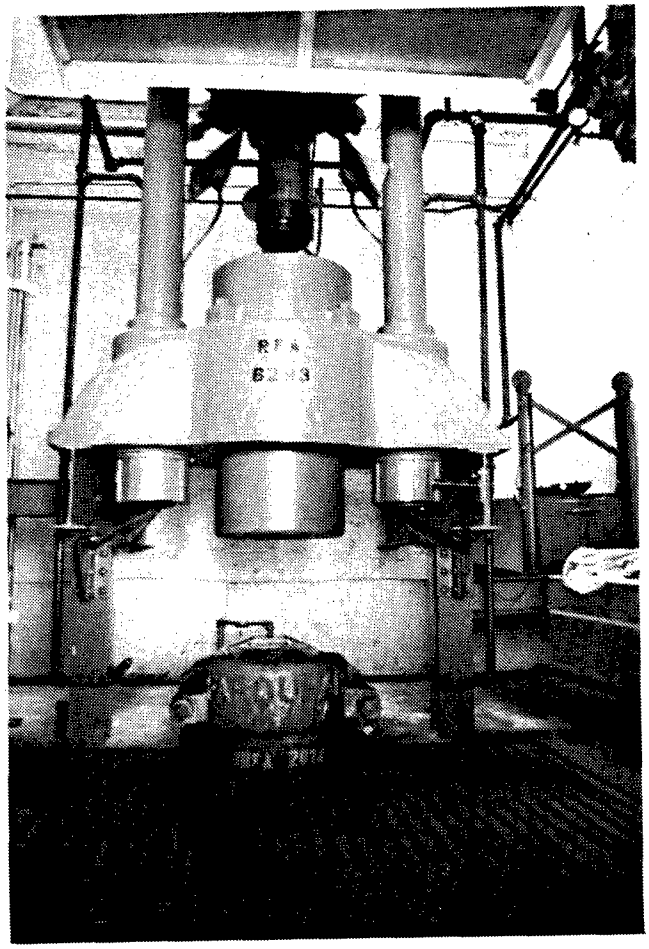

Figure 68. Building 1511: Another type of press used in this building.

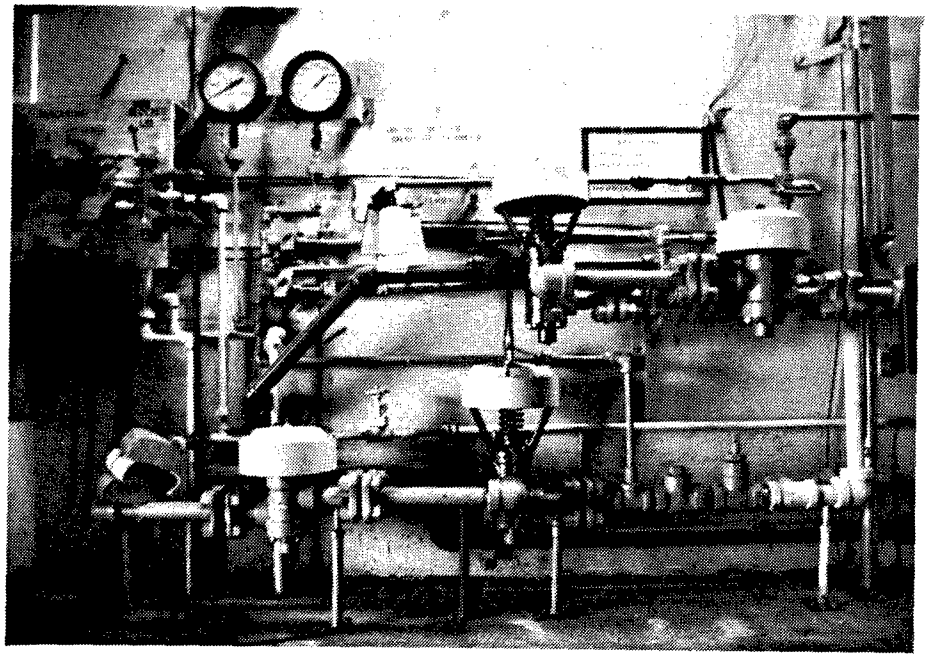

Figure 69. Building 1511: High pressure valves for the macaroni machine.

Figure 70. Building 1561: Block Breaker House.

Figure 71. Building 1561: Interior of the Block Breaker House.

Figure 72. Building 1513: Finishing Press and Cutting House equipped with "blow" panels for explosions that also provided easy access to the machinery for repairs.

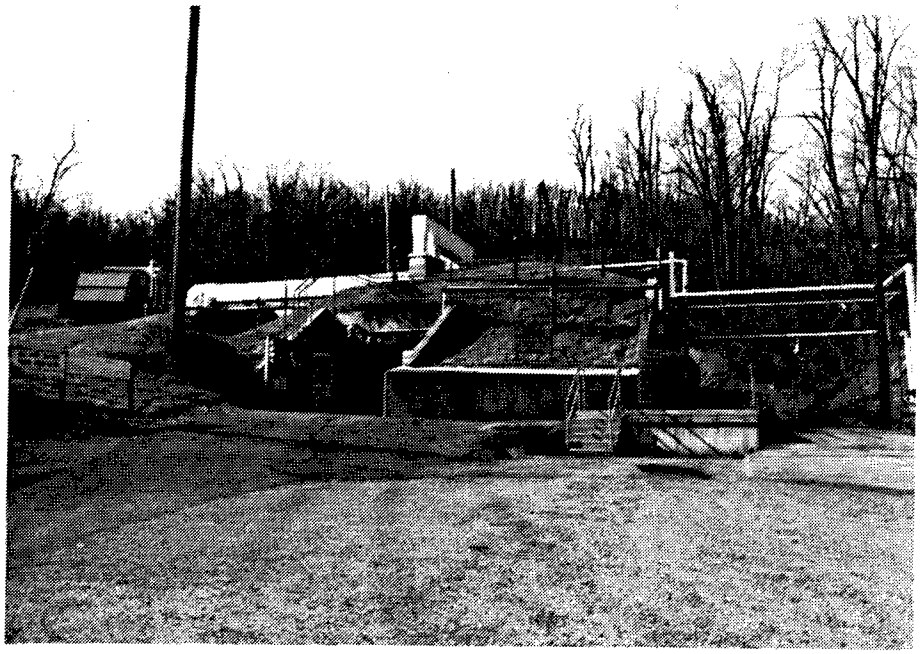

Figure 73. Building 5008-1: Fifteen-foot Press House where single-based powder blocks were pressed through extruding dies to form rocket propellant.

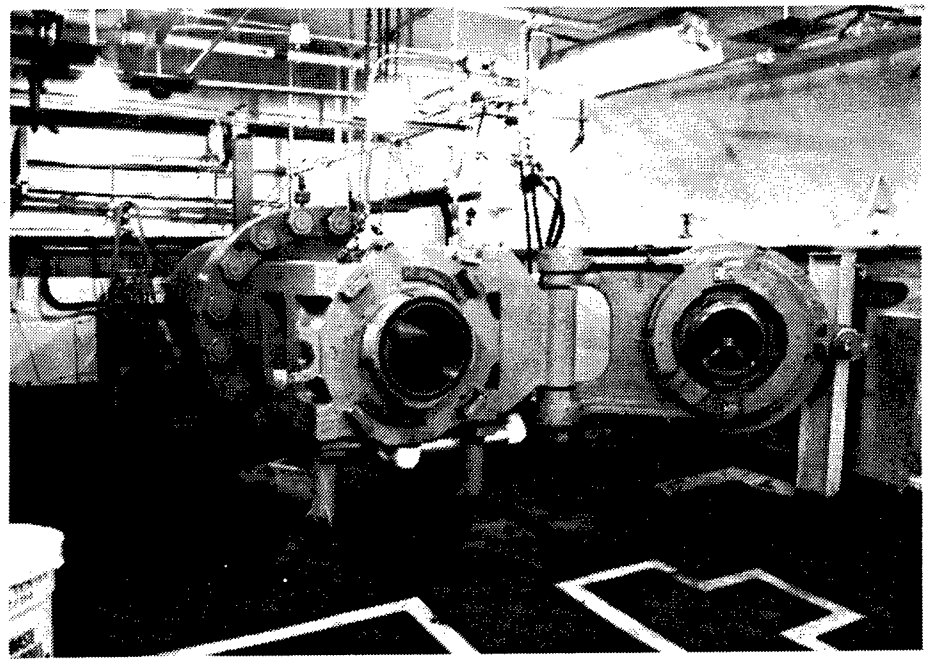

Figure 74. Building 5008-1: Hydraulic press for the production of rocket propellant.

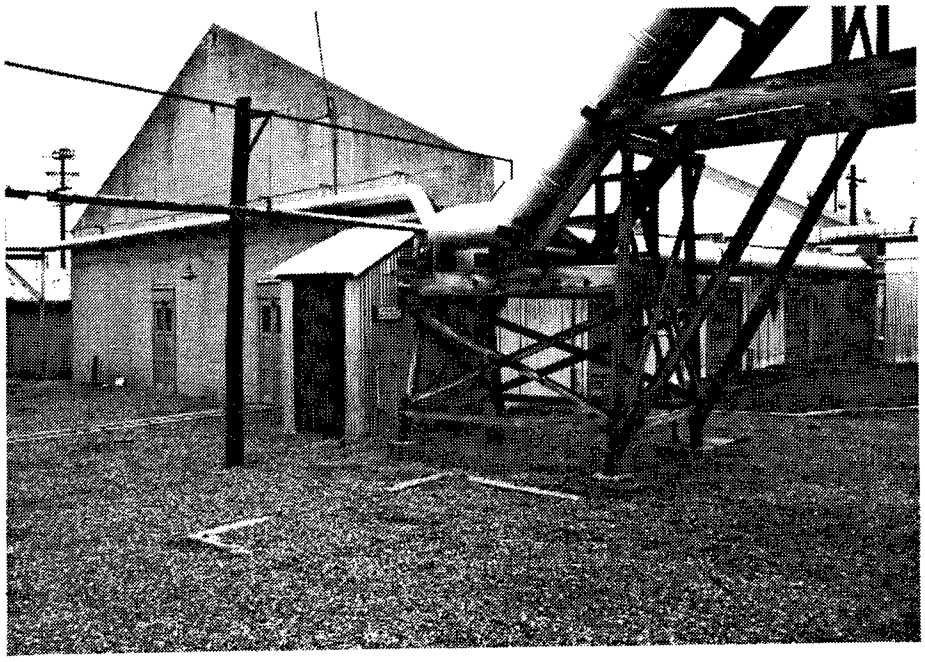

Figure 75. Building 2518: East wing of a Finishing and Cutting House.

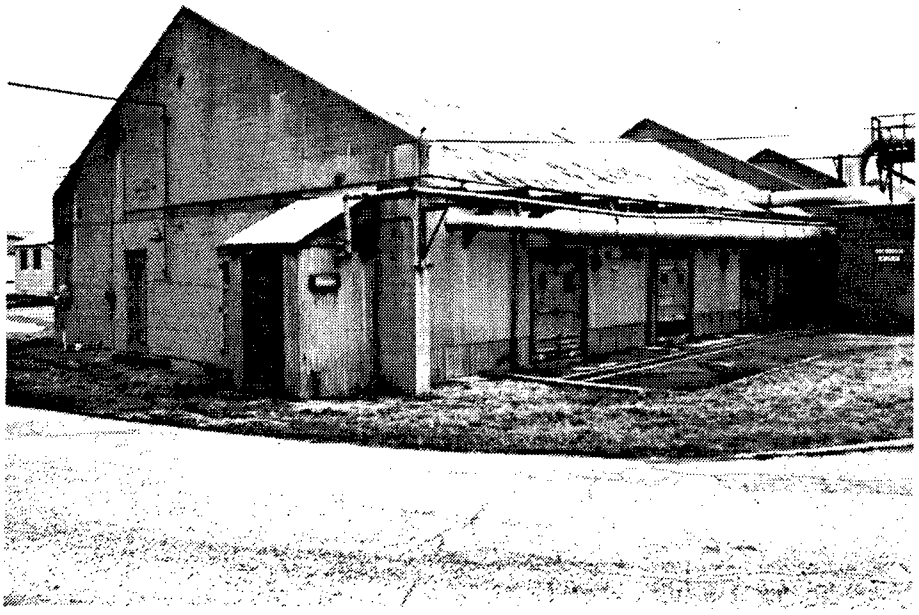

Figure 76. Building 2519: West wing of a Finishing and Cutting House.

Figure 77. Building 1513: Finishing Press and Cutting House where the loading station is equipped with four garage-like doors with Cyclone Ventilators on the back side of the building.

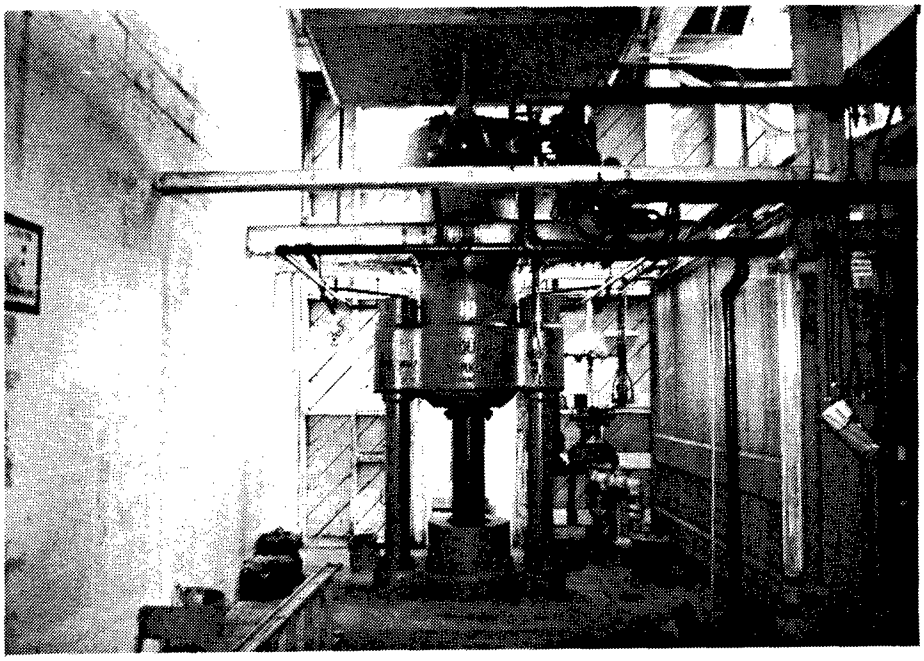

Figure 78. Building 1513: Macaroni press manufactured by Farquar-York of Pennsylvania.

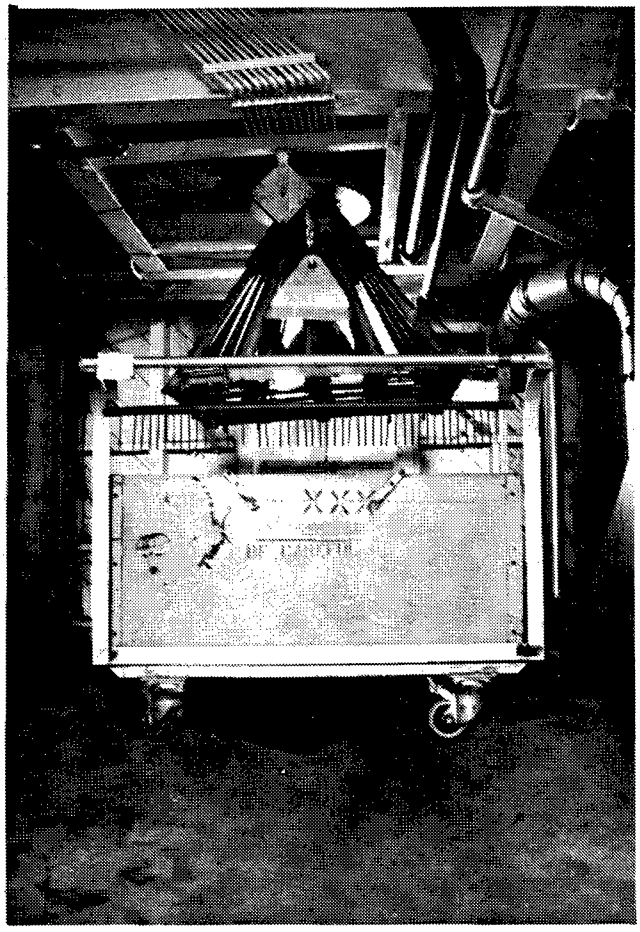

Figure 79. Building 3553: Macaroni separators such as this one directed the extruded powder strands into buckets.

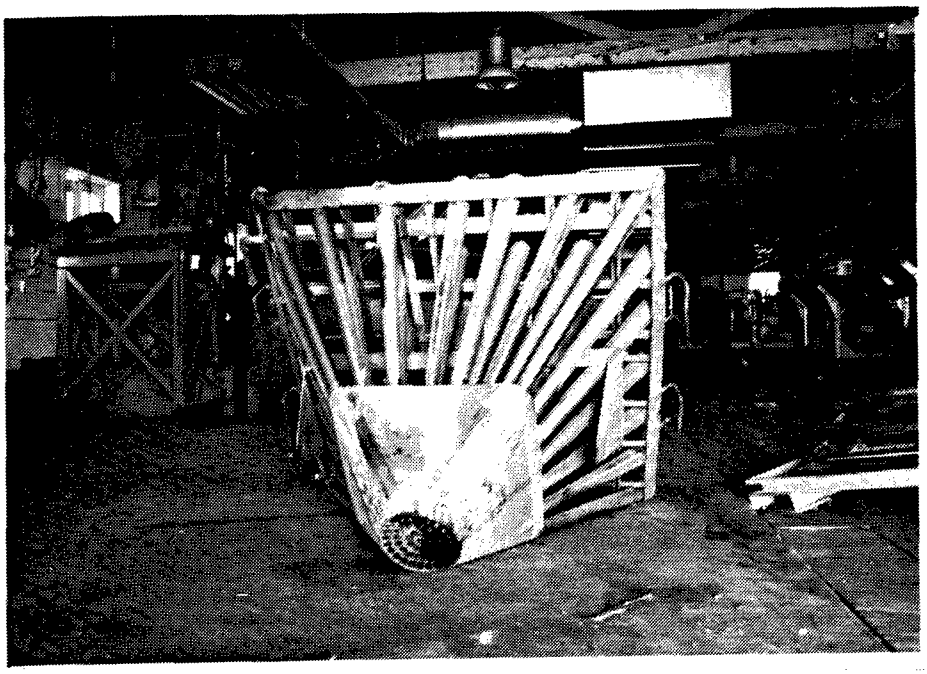

Figure 80. Building 1513: Macaroni separator without its cover.

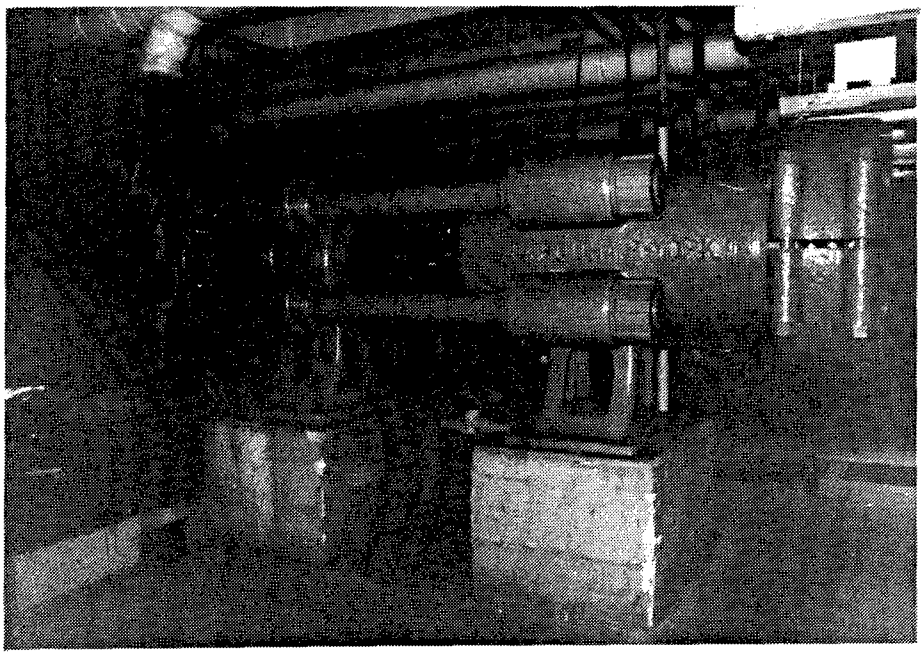

Figure 81. Building 2519: Farquar-York horizontal press.

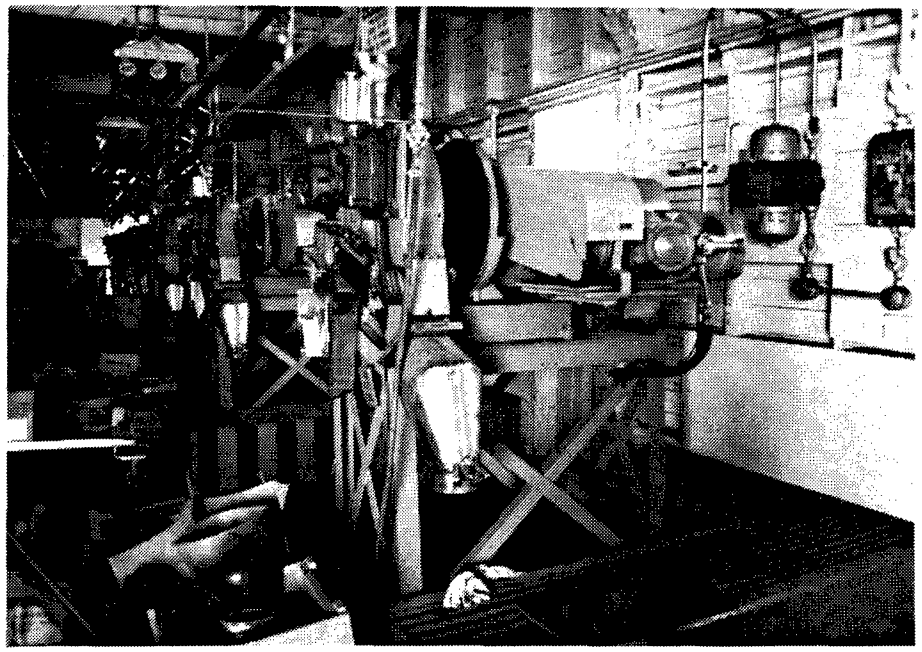

Figure 82. Building 1513: Cutting machine manufactured by McKiernan-Terry Company Manufacturing and Engineering, Dover, New Jersey.

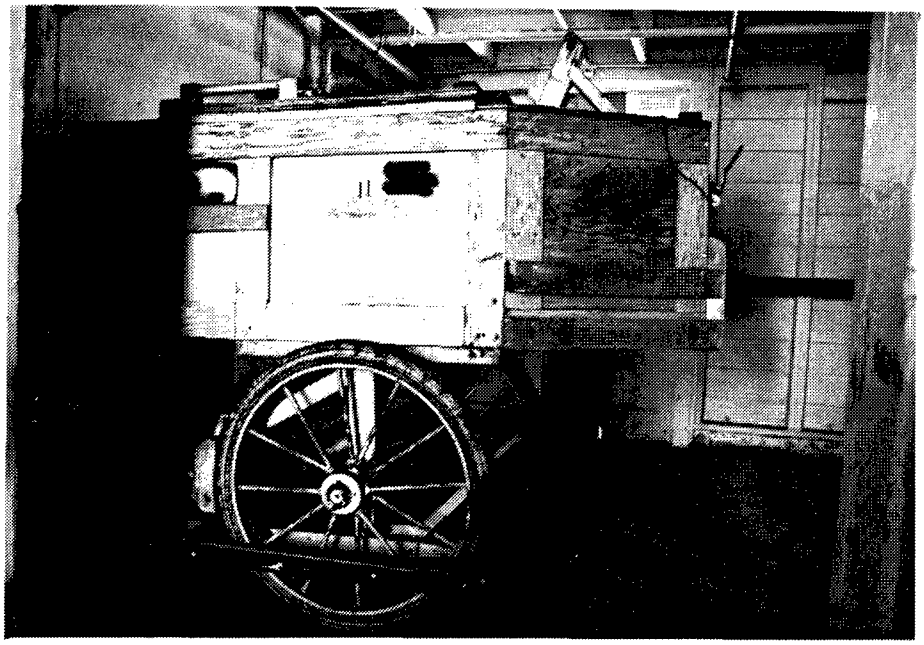

Figure 83. Building 1513: Angle Buggy that was used to transfer powder. The buggy was lead lined and had hard rubber tires with metal spokes.

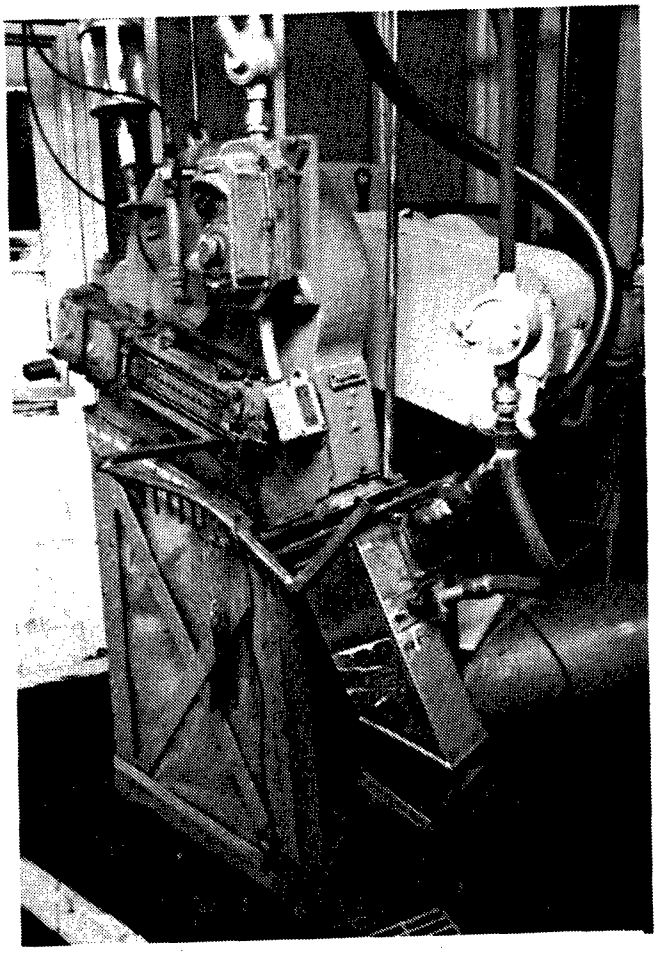

Figure 84. Building 5008-1: This McKiernan-Terry Company cutting machine was initially employed at the Sunflower Army Ammunition Plant.

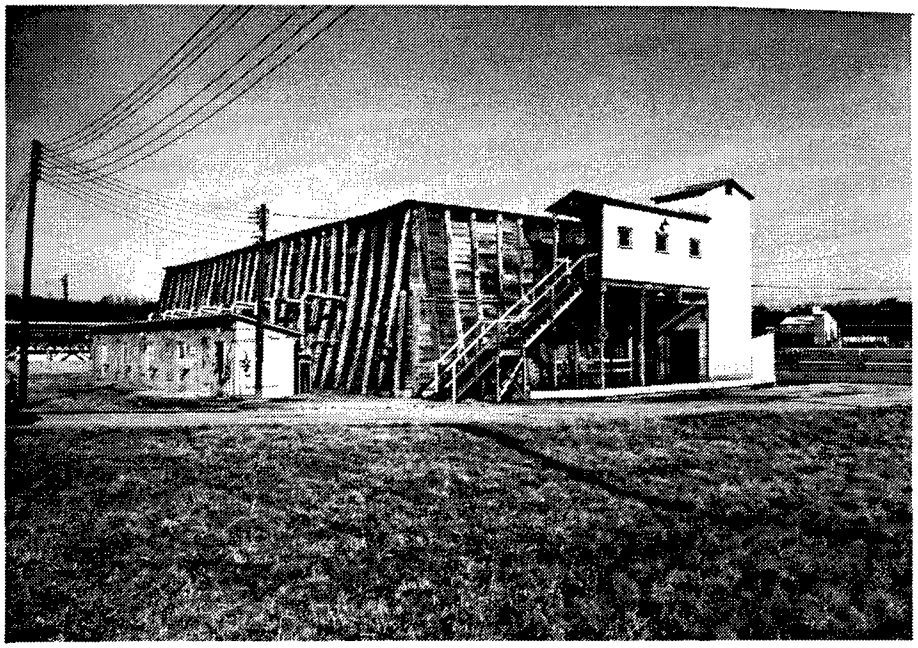

Figure 85. Building 1622: Solvent Recovery House. Outside the barricade is the Solvent Recovery Blower House (left) and the Elevator/Stair Building (right).

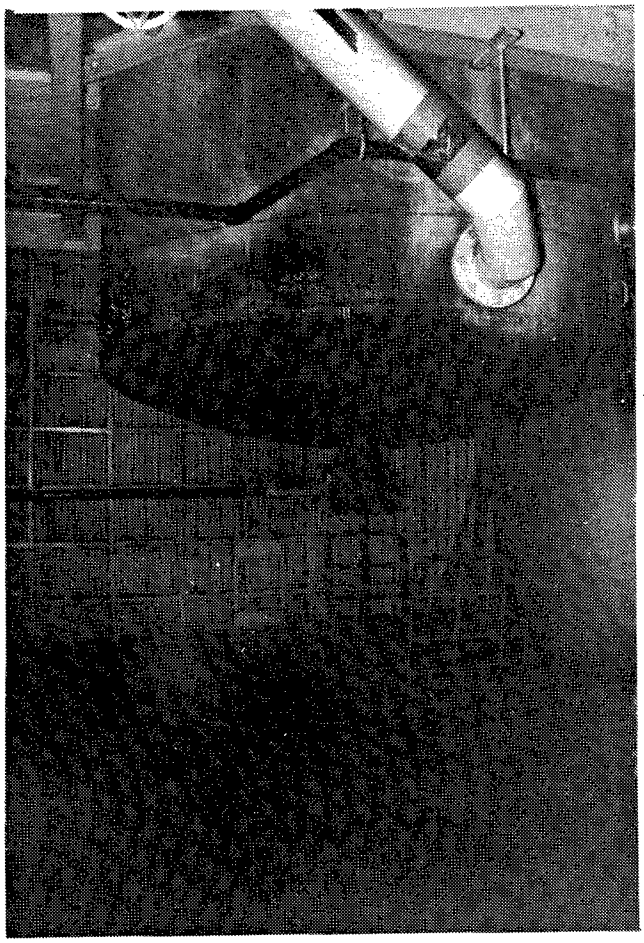

Figure 86. Building 1622: Bottom of tank on the first level of a Solvent Recovery House.

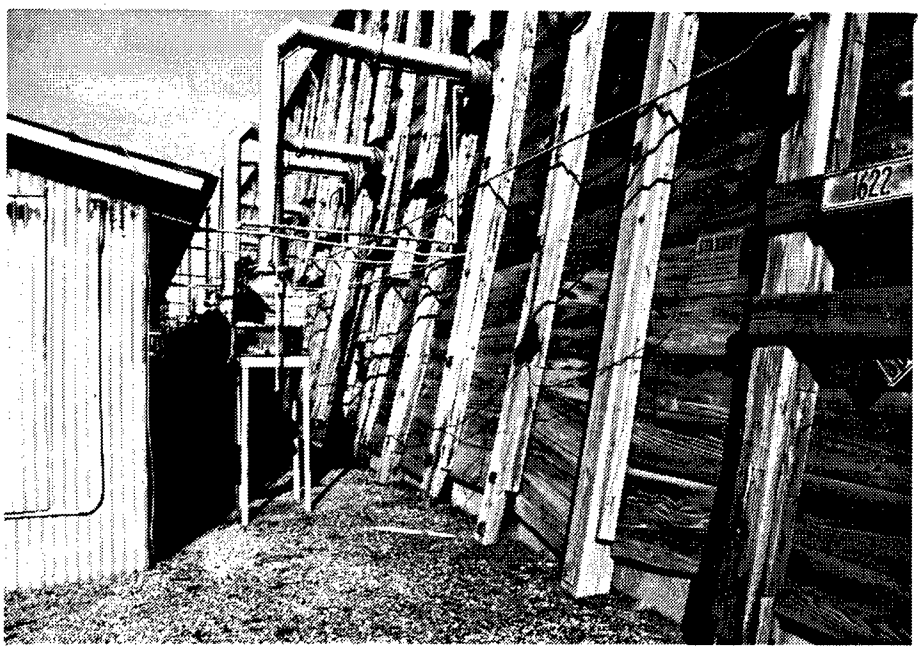

Figure 87. Building 1622: Filter blowers between a Blower House and barricade.

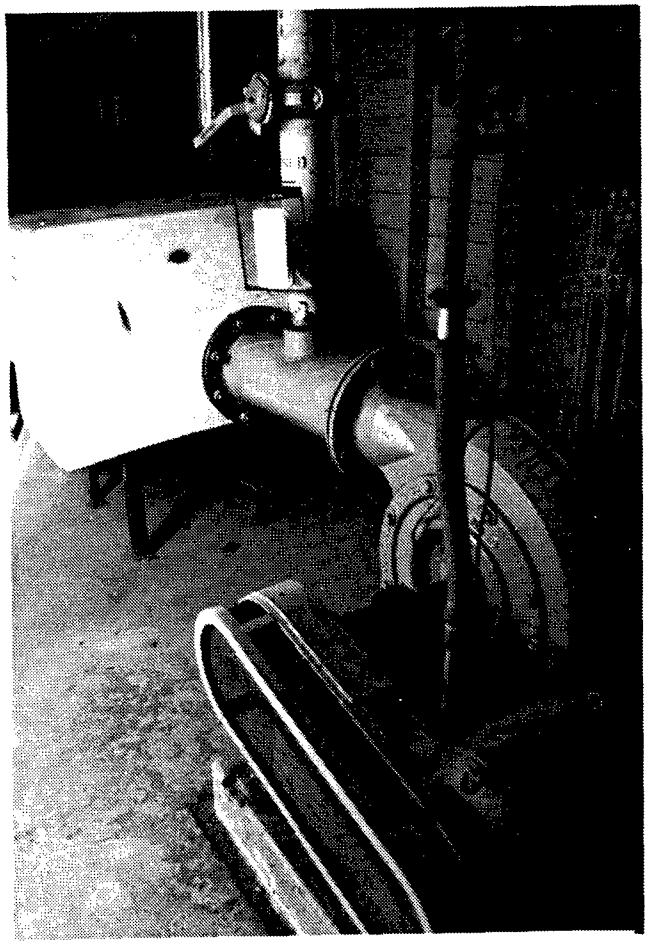

Figure 88. Building 1622: Blowers and their motors.

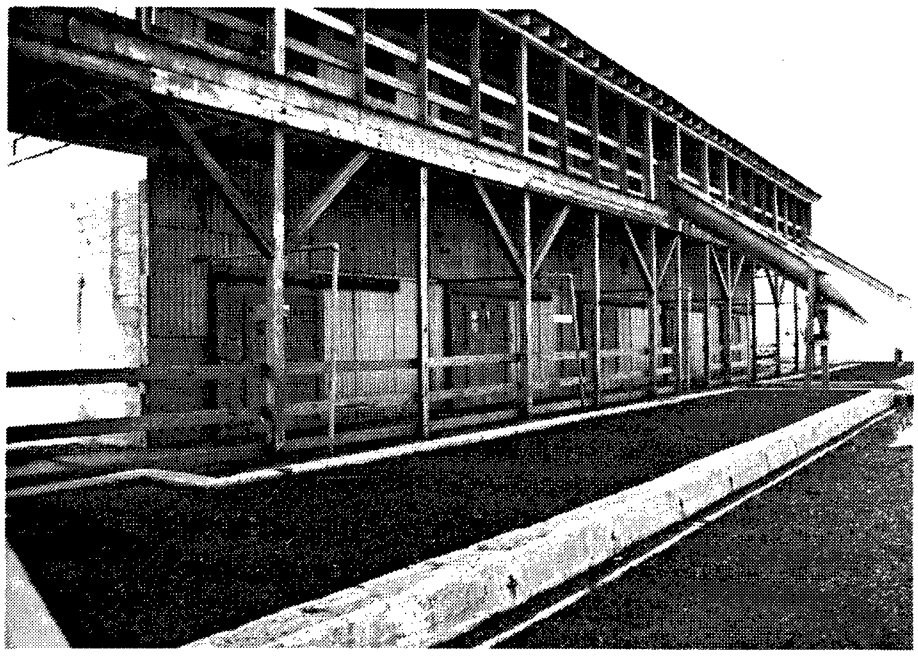

Figure 89. No Building Number: An example of a Solvent Recovery House without a barricade.

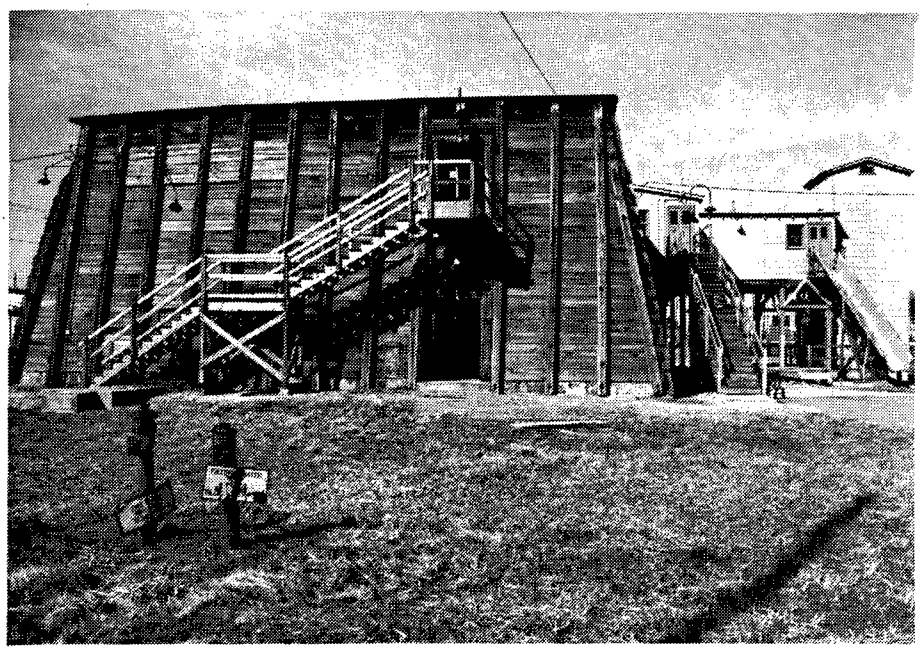

Figure 90. Building 4909-3: A different structural design of a Solvent Recovery House. A road runs between the barricaded Solvent Recovery House and its Elevator/Stair Building.

Figure 91. Building 4914: Originally, this building served as a Dust Collection House.

Figure 92. Building 1727: Dry Screen House.

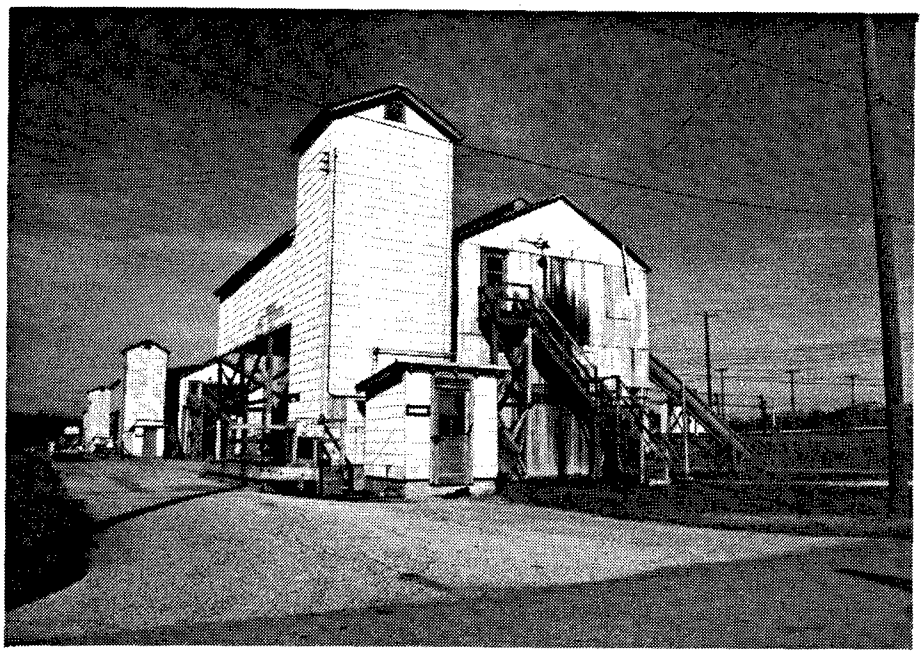

Figure 93. Building 1668: Water Dry House where any residual solvent was removed from the powder.

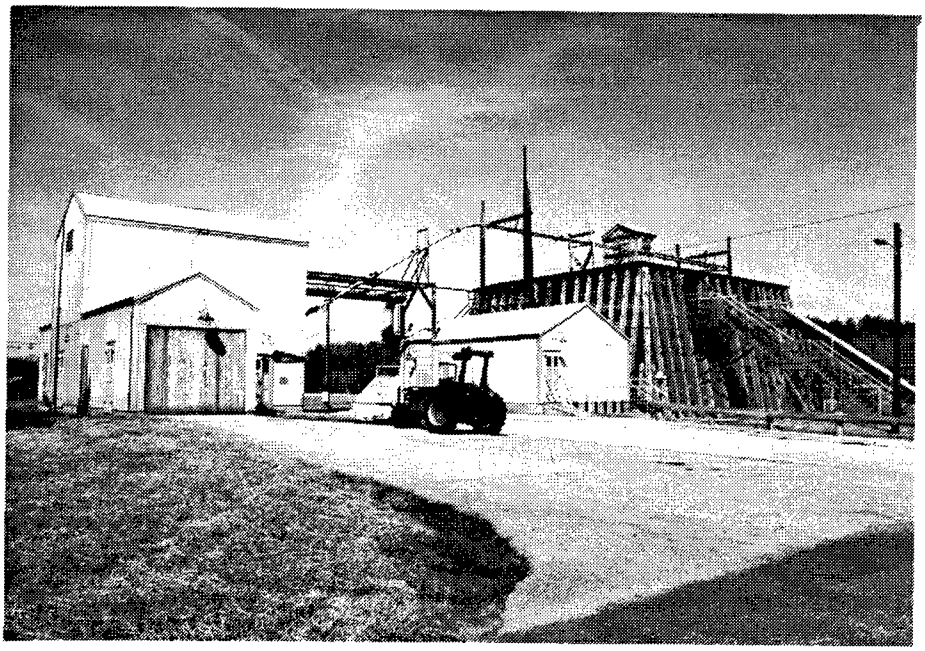

Figure 94. Building 1828: Final Blending House and Control House where the powder was made in batches that had to be uniform to ensure consistent ballistic quality.

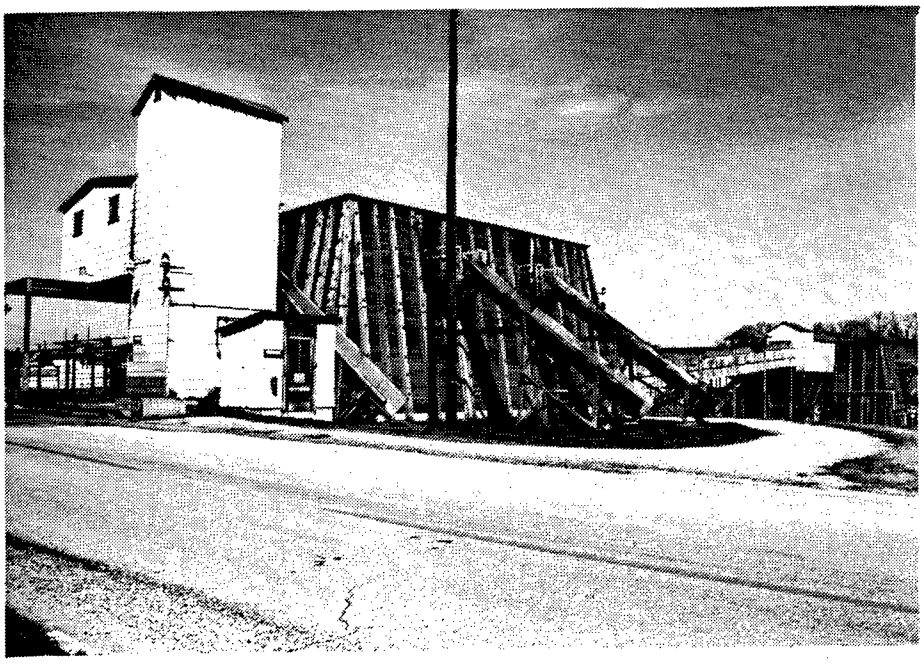

Figure 95. Building 1825 and Building 1875: The Final Blend House (foreground is Building 1825) is connected to the Can Pack House (Building 1875) by a conveyor system.

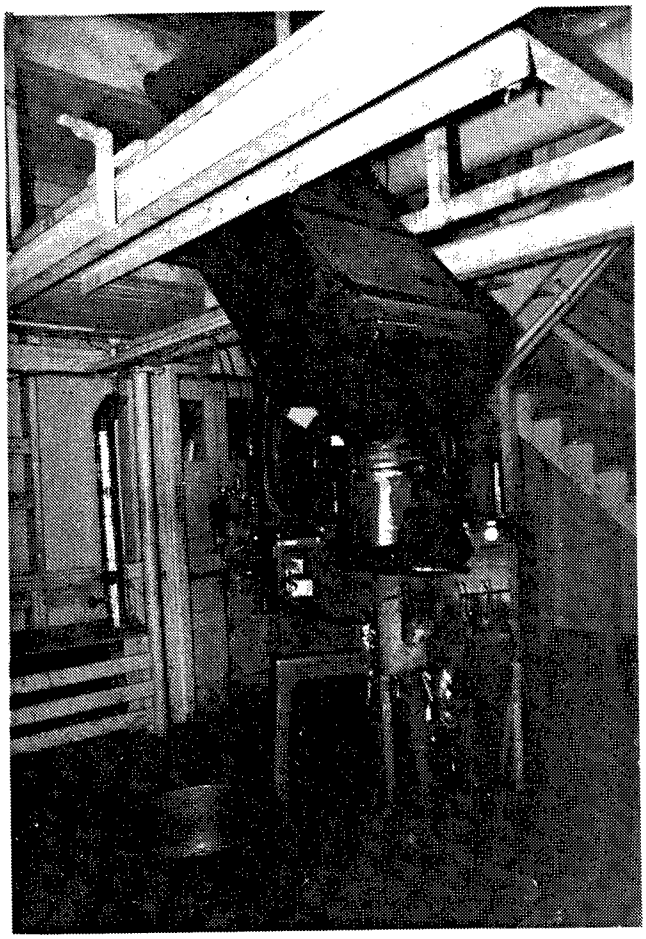

Figure 96. Building 1825: Chute-dump station on the third floor of this building where powder enters the blending process.

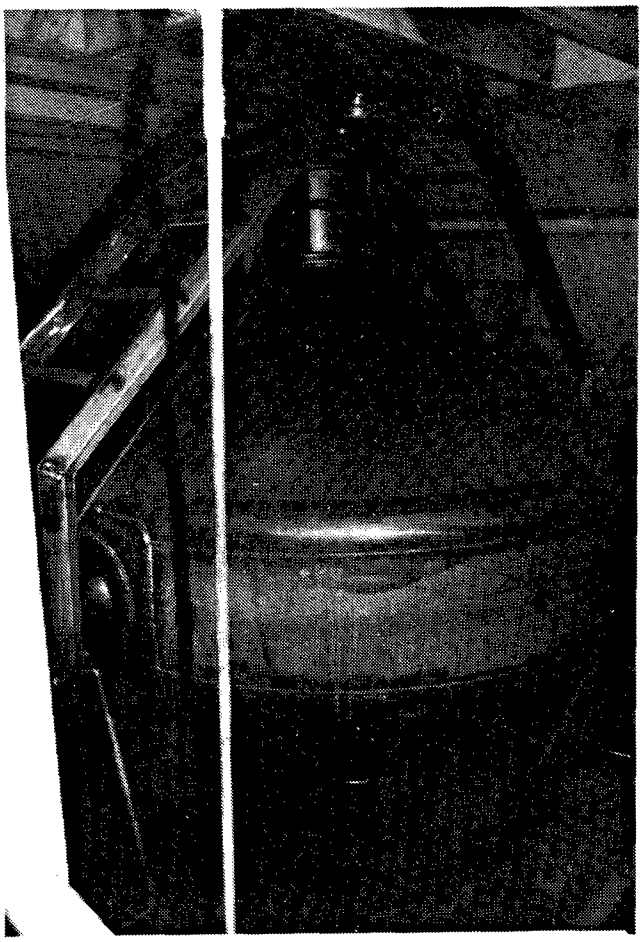

Figure 97. Building 1825: Blender on the first floor.

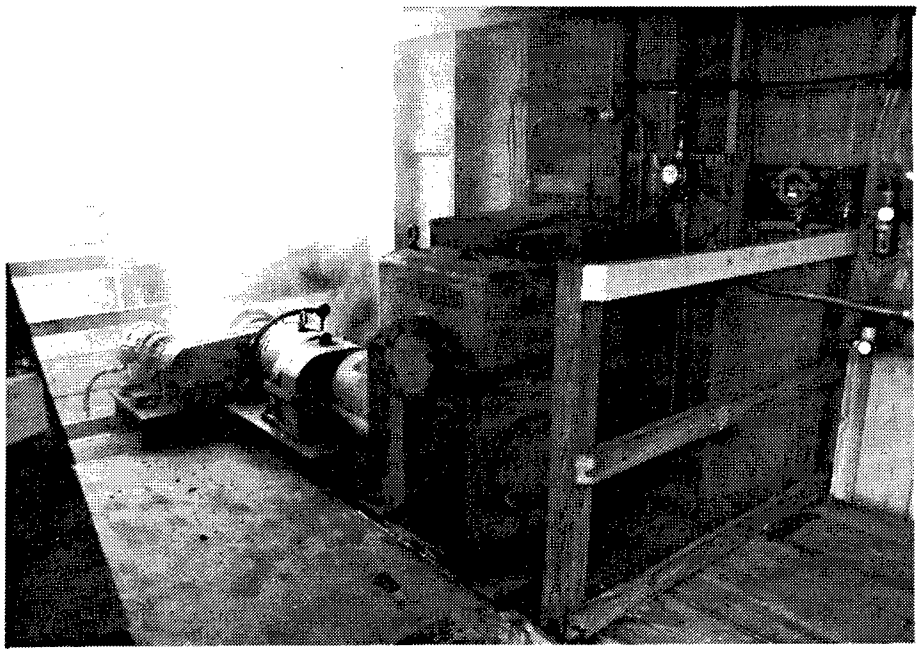

Figure 98. Building 1825: Cleveland worm gear reduction unit on the second floor.

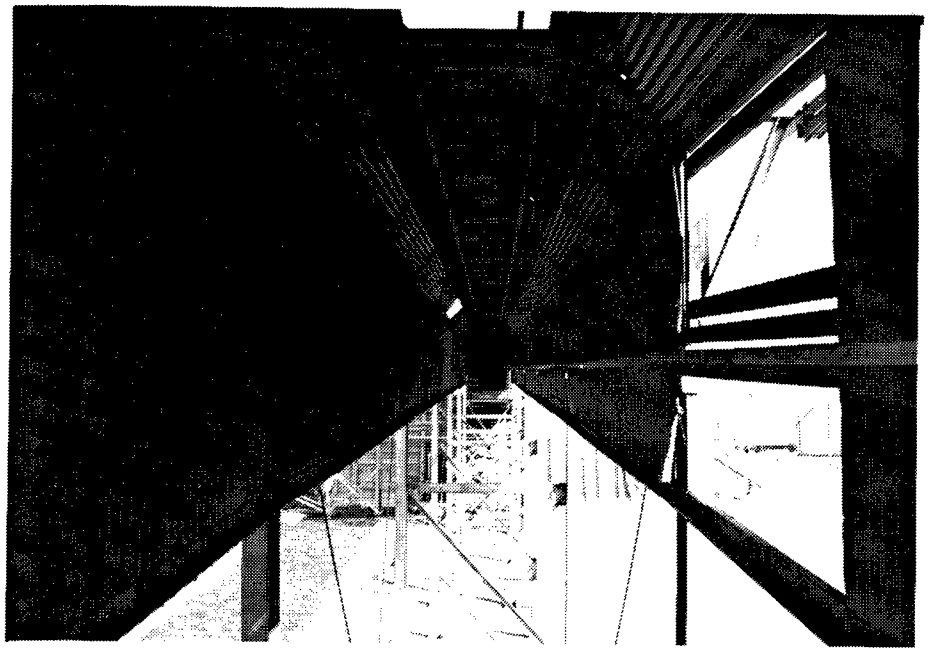

Figure 99. Building 1825: The powder conveyor system on the first floor where buckets attached to this hanging rail system transferred powder from the Final Blend House to the Can Pack House.

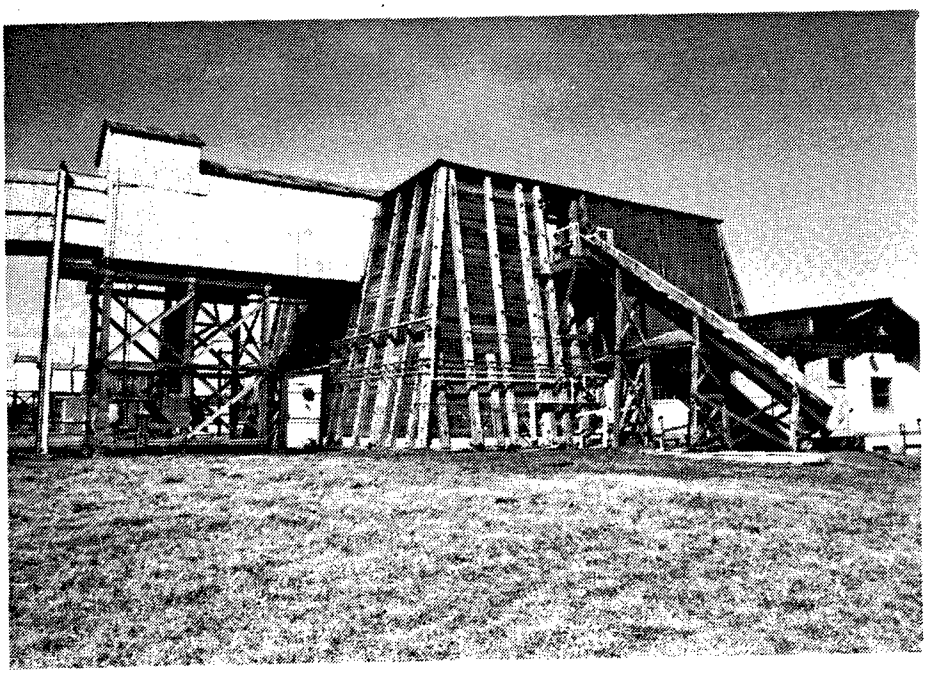

Figure 100. Building 1875: Can Pack House.

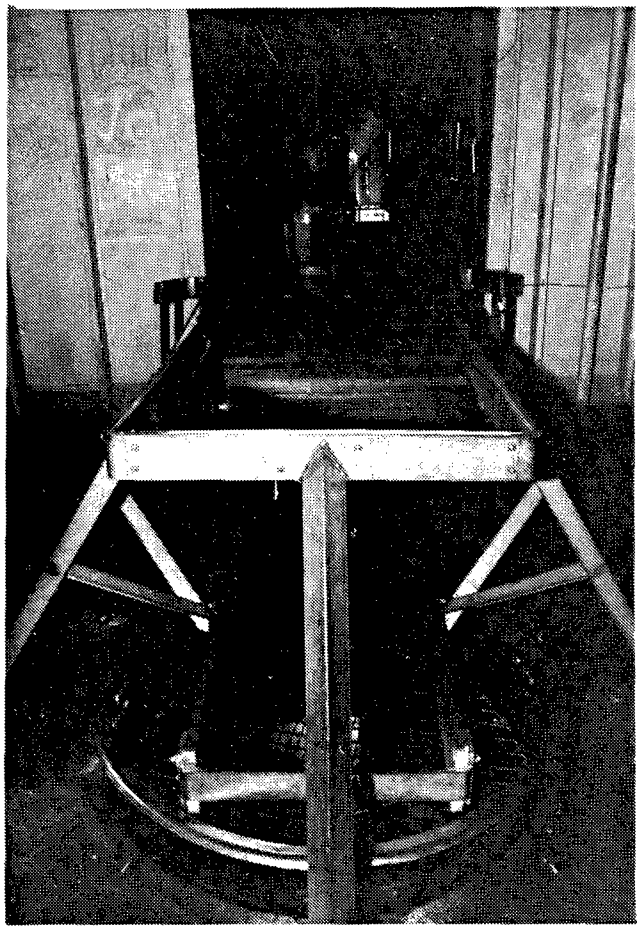

Figure 101. Building 1875: Top of the powder chute on the third floor.

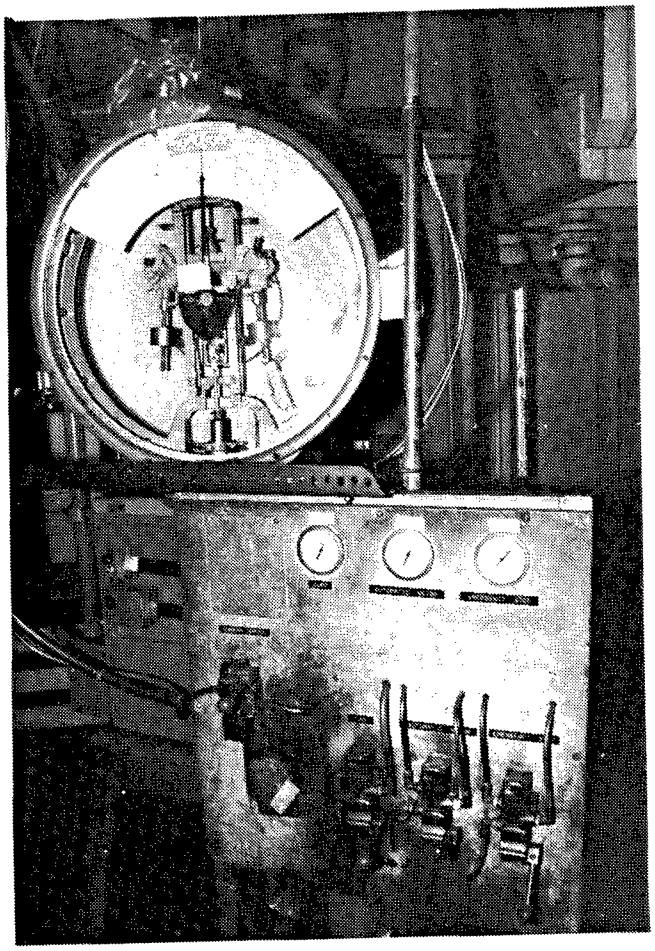

Figure 102. Building 1875: This first floor chute dispensed powder (transferred to the Can Pack third floor from the Final Blend House) which was then weighed and packed into cans.

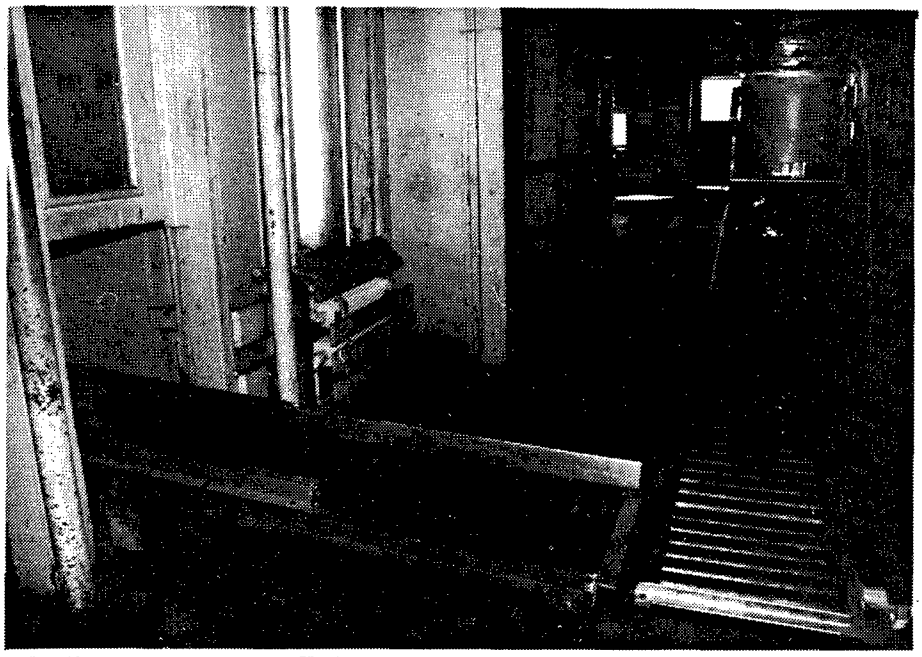

Figure 103. Building 1875: On the first level, the empty powder containers were brought down the conveyor belt to the left, the cans were packed, and the filled cans traveled the conveyor belt to the right.

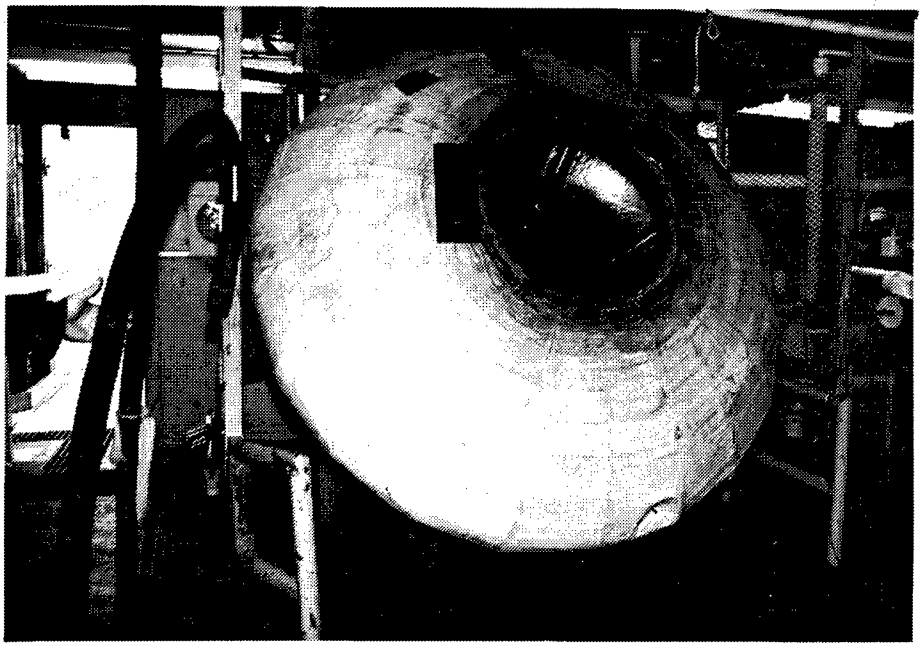

Figure 104. Building 4952-1: Coating barrel manufactured by Camden Copper Works, Camden, New Jersey, located in the Coating House.

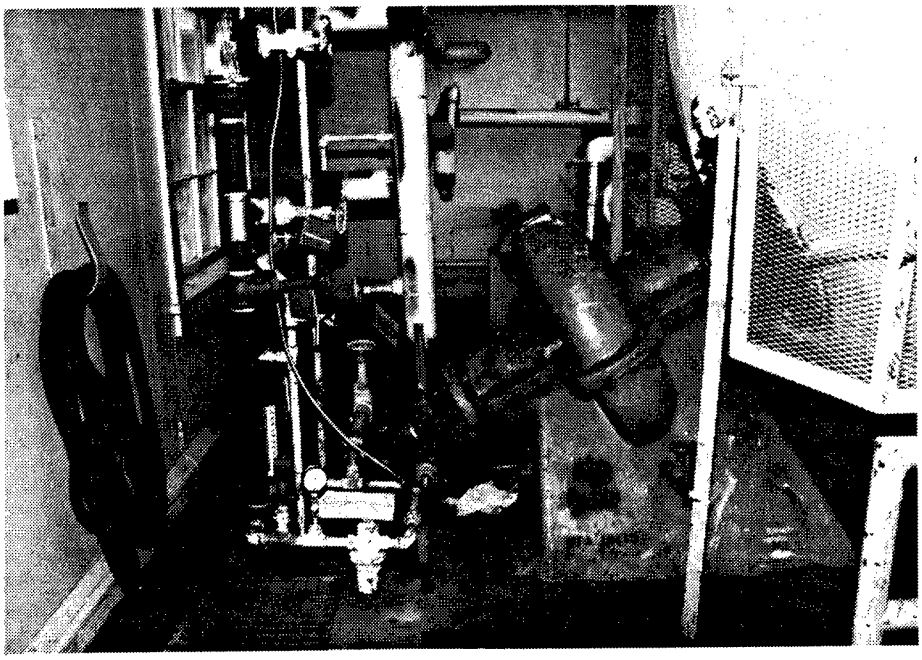

Figure 105. Building 4952-1: Back of the coating barrel.

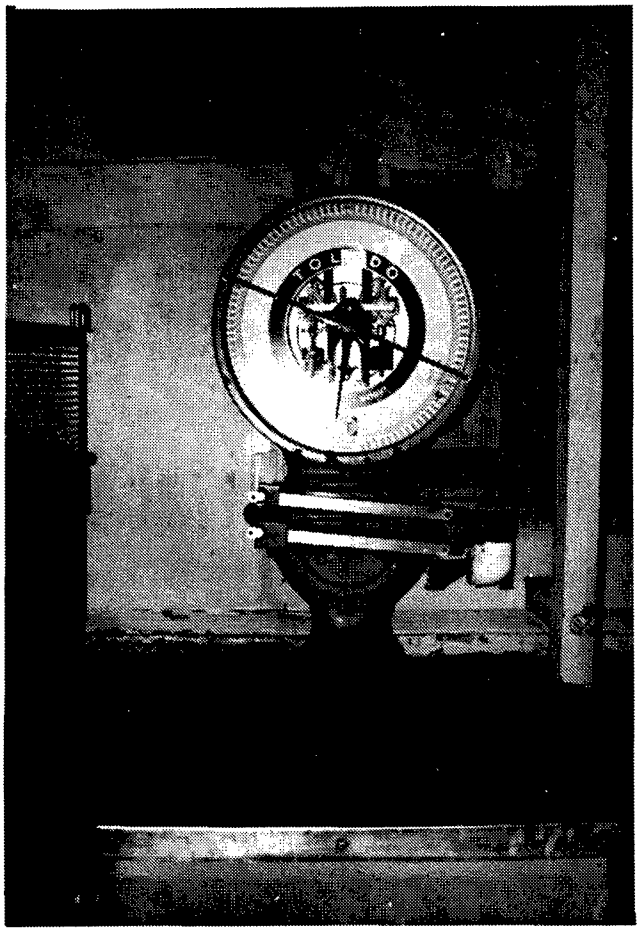

Figure 106. Building 4952-1: Toledo scale that was employed to weigh the correct amount of water that needed to be added to the coating barrels.

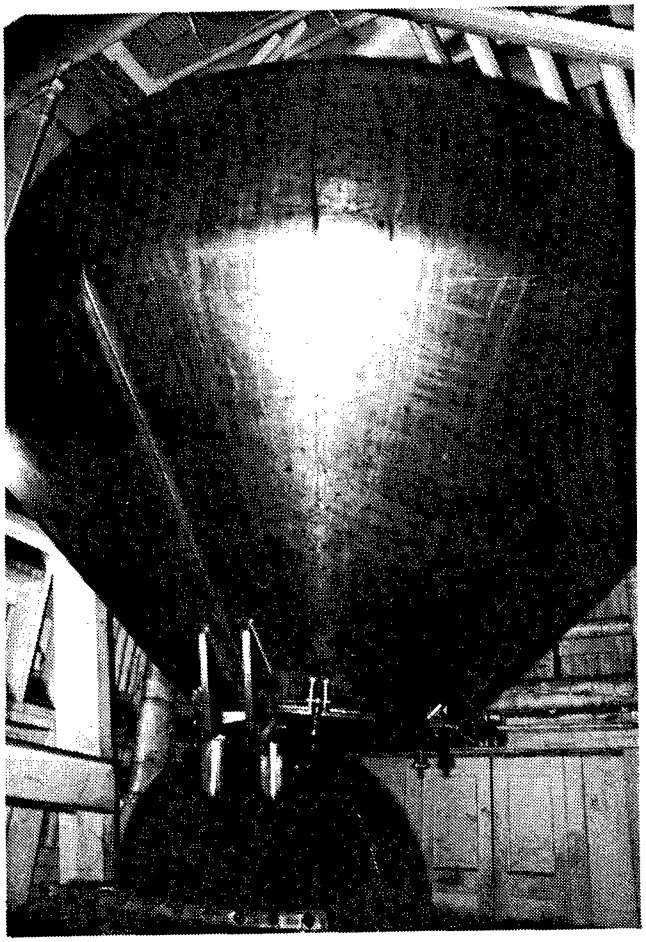

Figure 107. Building 1800: A glazing barrel at the Glaze House.

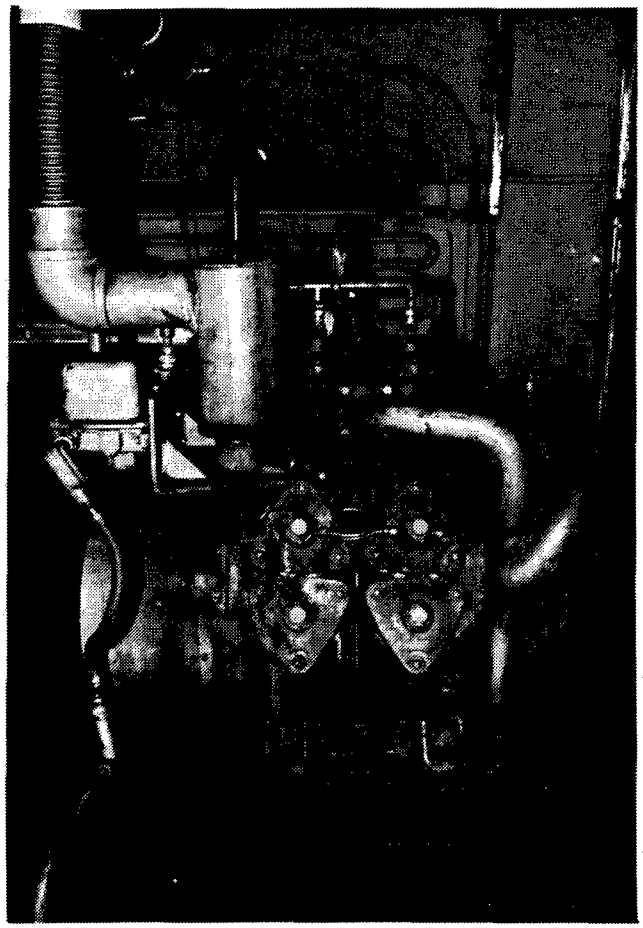

Figure 108. Building 1814: Ingersoll-Rand air compressor at the Blending and Glazing House.

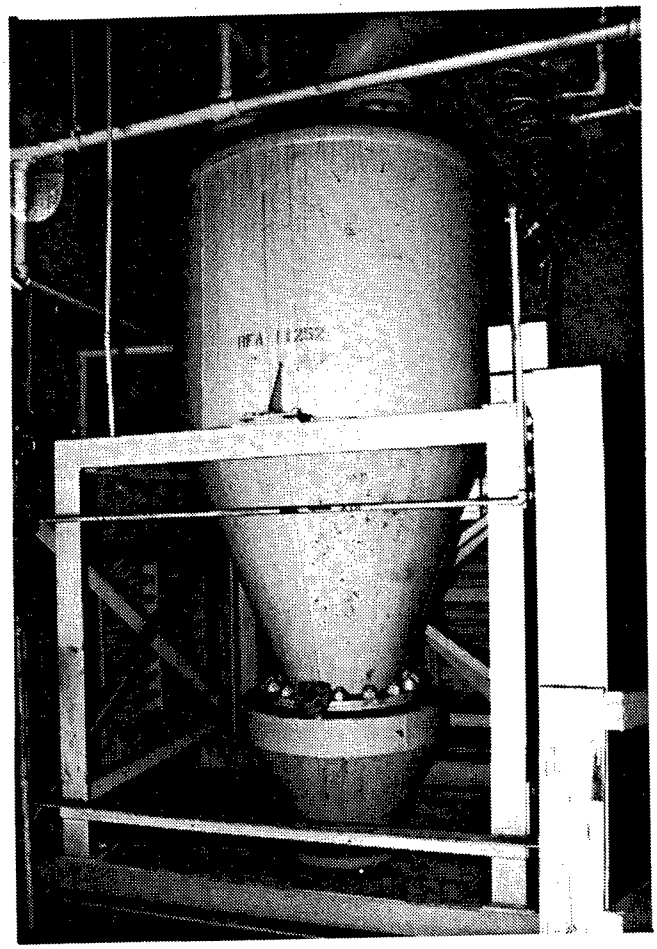

Figure 109. Building 1814: Cyclone ventilation unit.

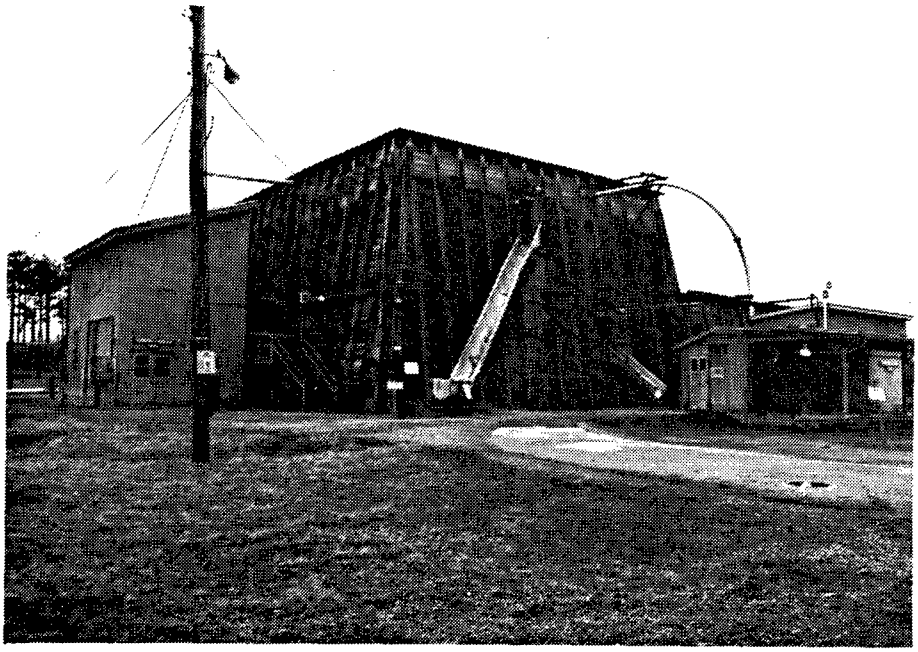

Figure 110. Building 1814B: Buggy Unloading and Control House for the Blending and Glazing House. This structure design is unique to Radford Army Ammunition Plant.

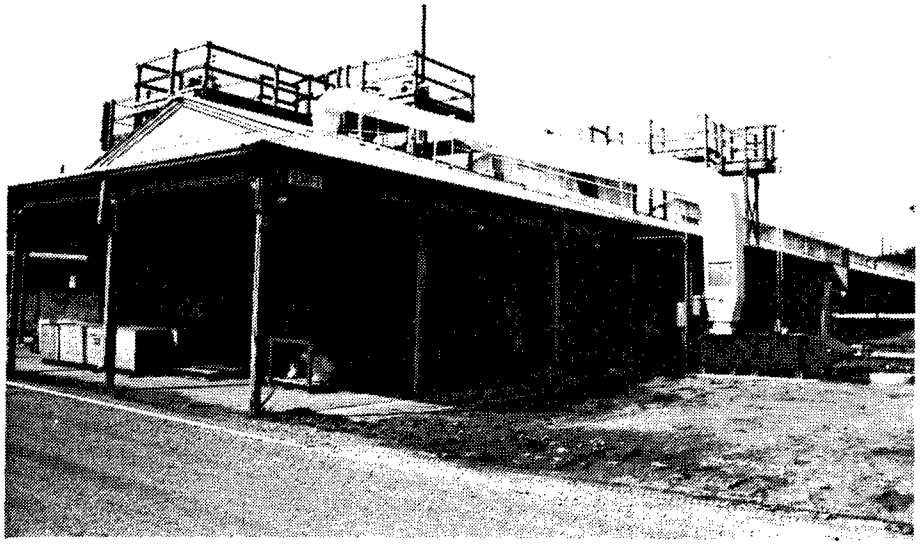

Figure 111. Building 9310-01: Rolled Powder Building of Rolled Powder Area #4 (RP4).

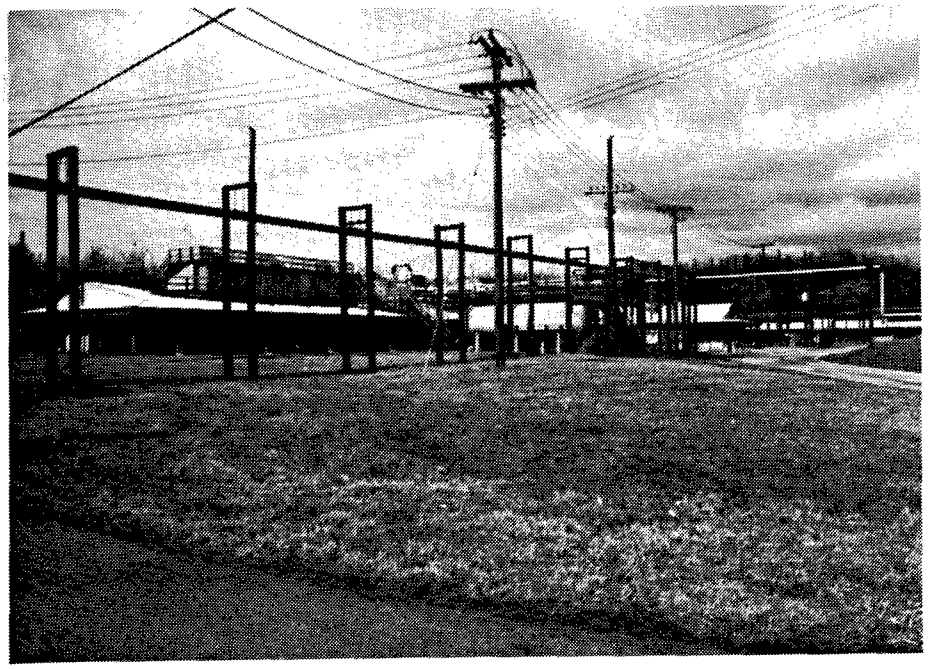

Figure 112. Building 7113: Rolled Powder Building in Rolled Powder Area #1 (RP1). Note: Due to the terrain where RP1 is situated, this Rolled Powder Building is "L" shaped.

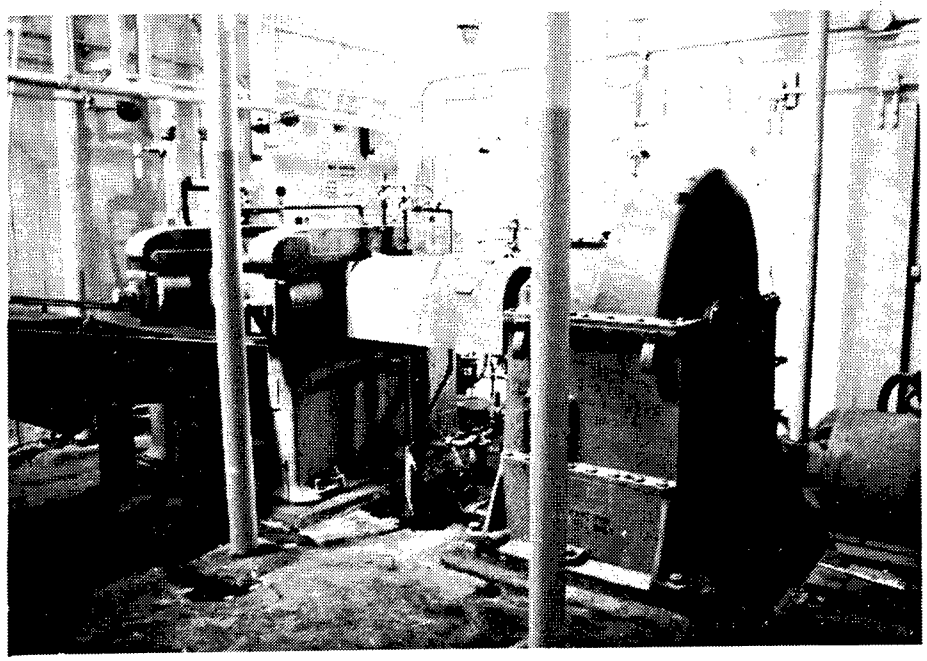

Figure 113. Building 9310-01: Pre-roll machine by Farrel in Rolled Powder Area #1.

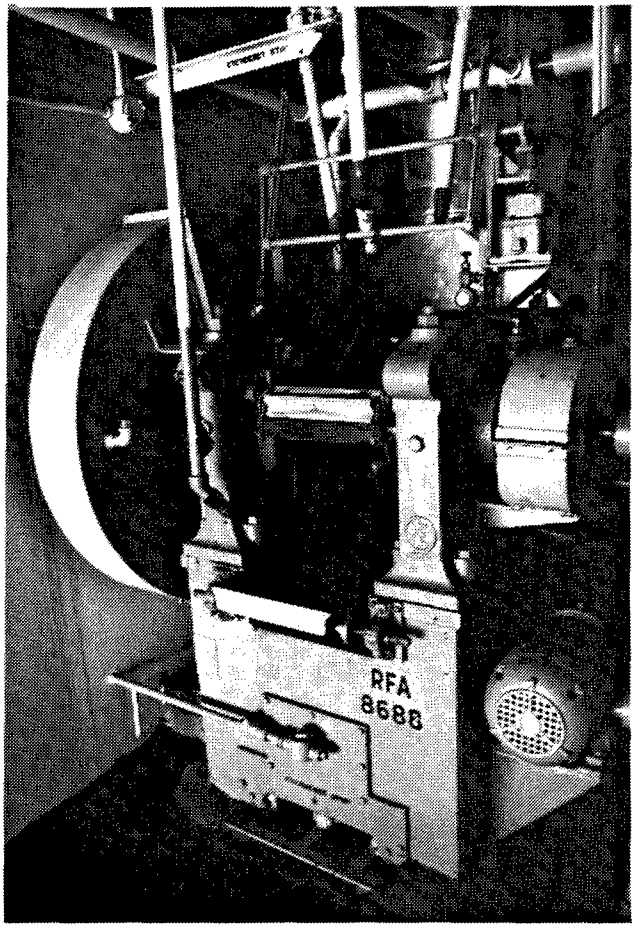

Figure 114. Building 9309-04: Roll Mill in the Rolled Powder Building.

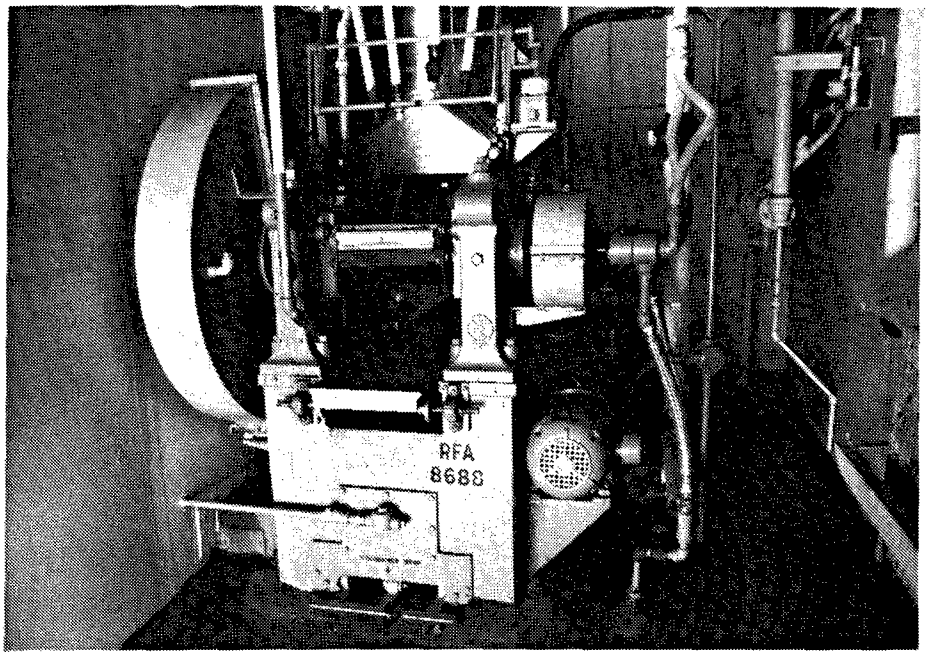

Figure 115. Building 9309-04: Punch.

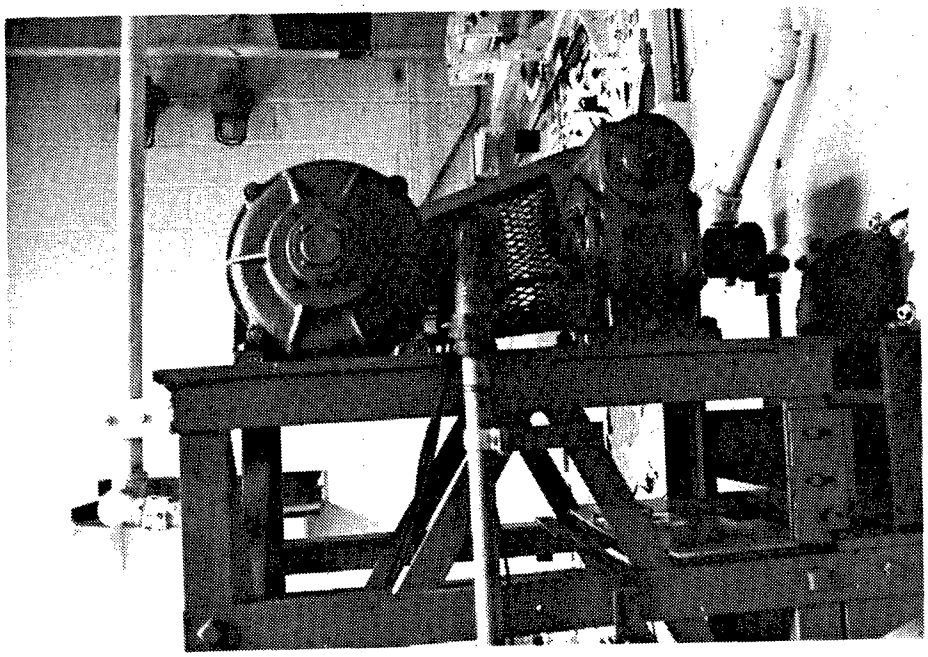

Figure 116. Building 9309-04: De-thread machine manufactured by Foote Brothers Gear and Machine Company.

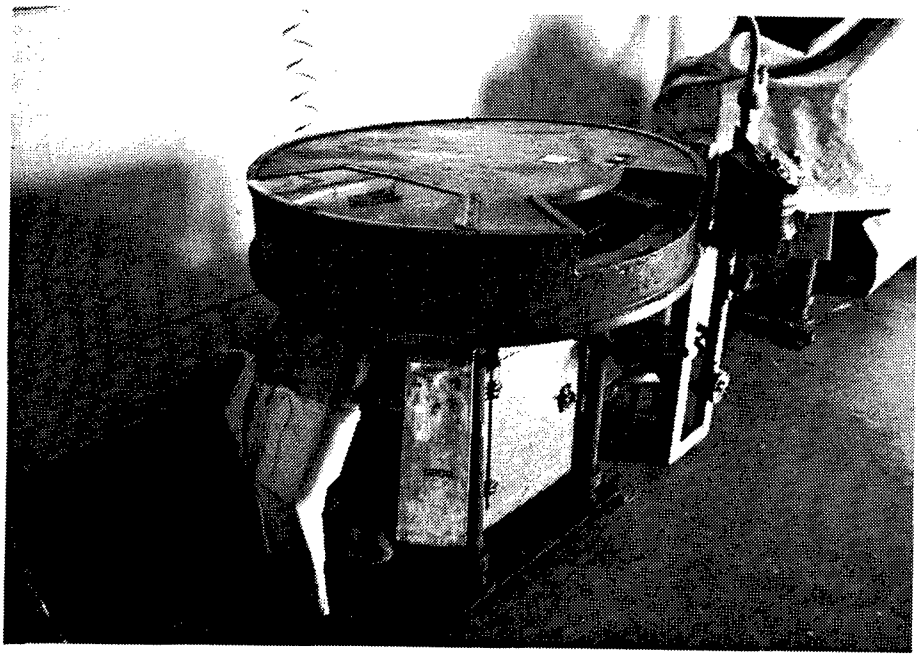

Figure 117. Building 9309-04: This machine weighs the correct amount of powder into bags.

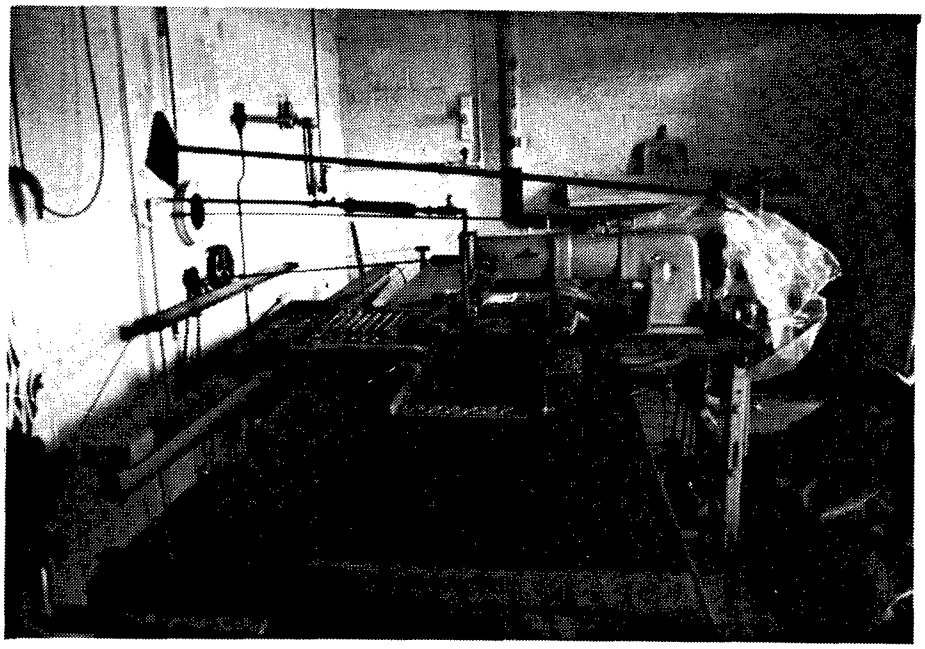

Figure 118. Building 9309-04: Adler sewing machine used to sew together sheets of powder.

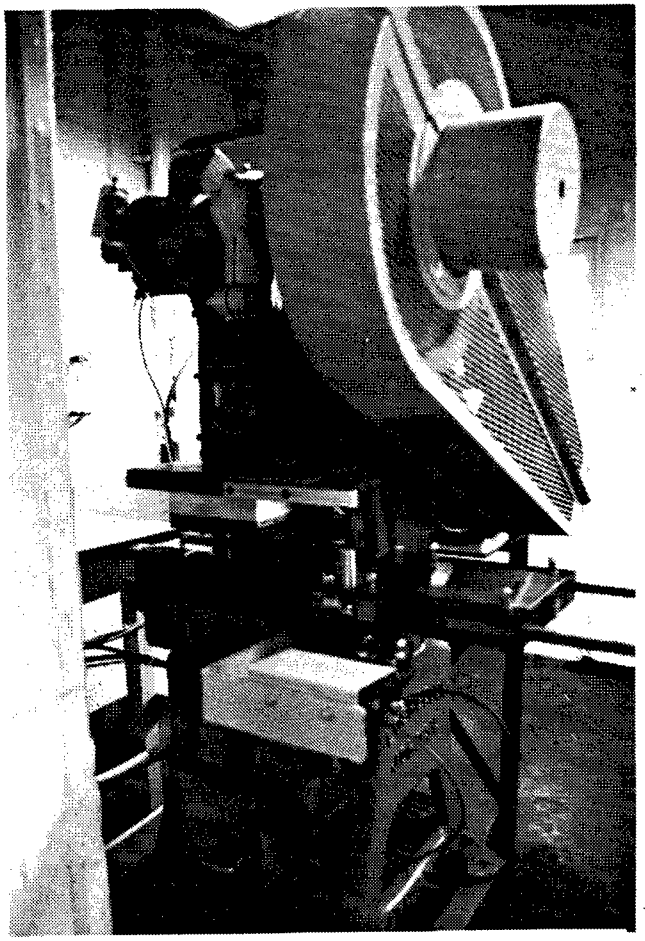

Figure 119. Building 9309-04: Pinch press manufactured by Loshbough Jordan of Elkhart, Indiana.

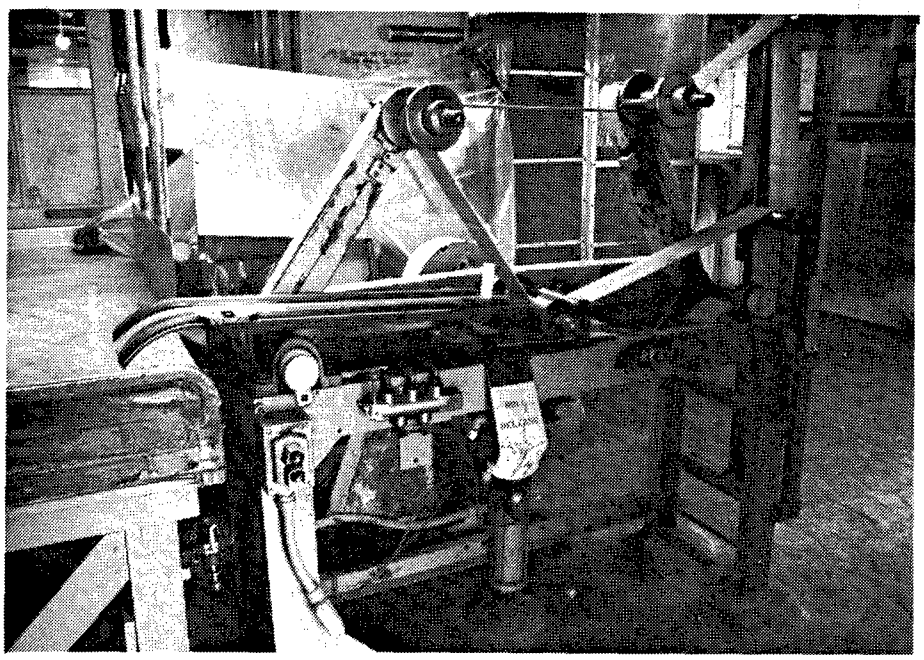

Figure 120. Building 9309-03: Carpet Roller in Rolled Powder House #4.

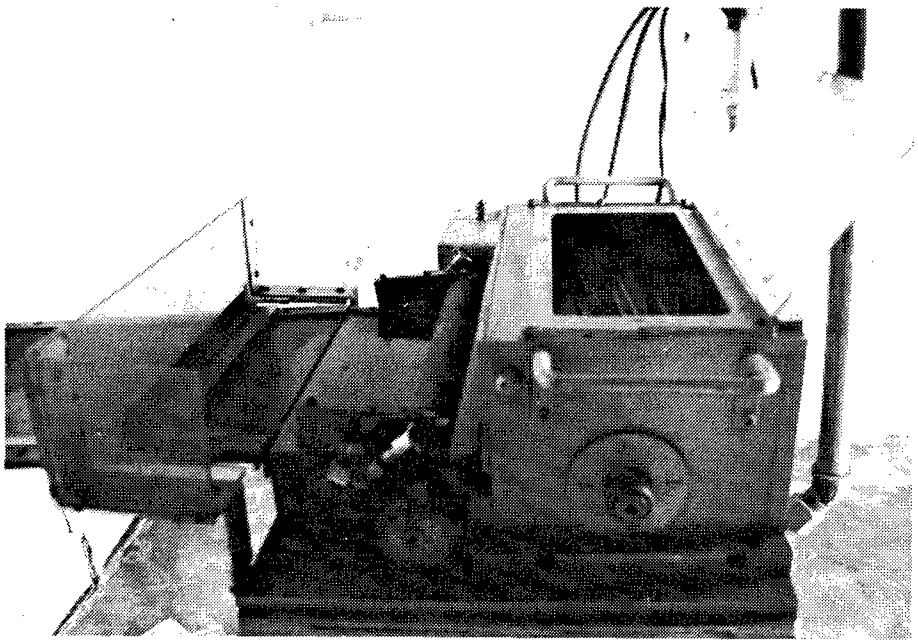

Figure 121. Building 9309-04: Milling machine.

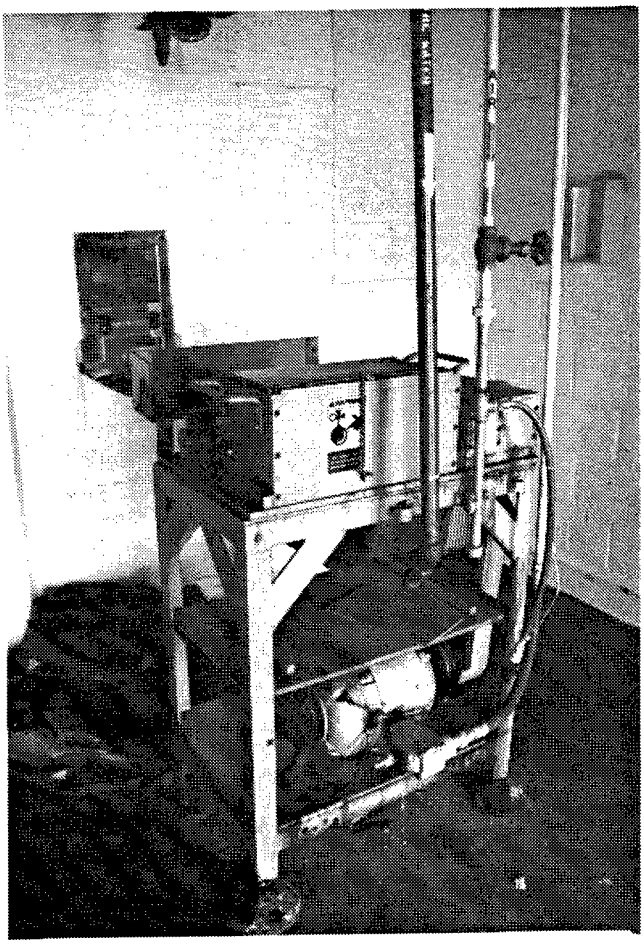

Figure 122. Building 9309-04: Another view of this milling machine.

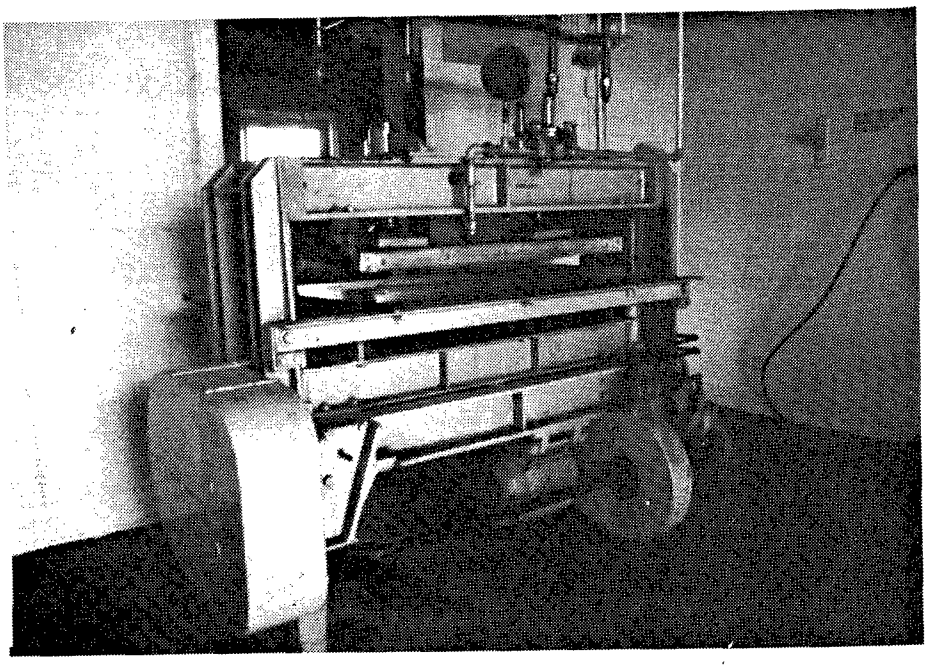

Figure 123. Building 9309-04: Sheet powder cutting machine on which propellant sheet stock was slit into strips and prepared into rolls.

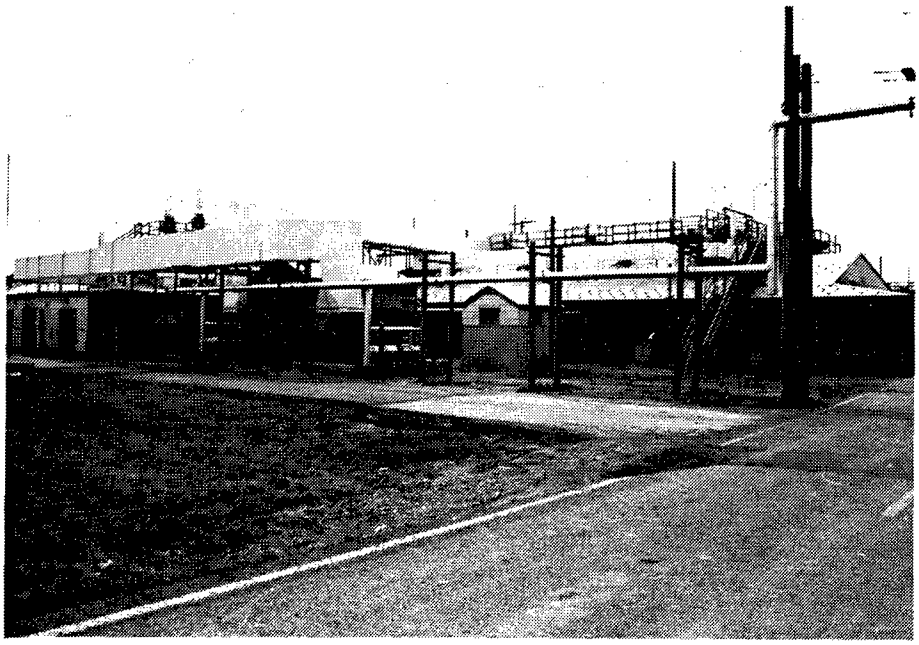

Figure 124. Building 9309-03: Rolled Powder Building.

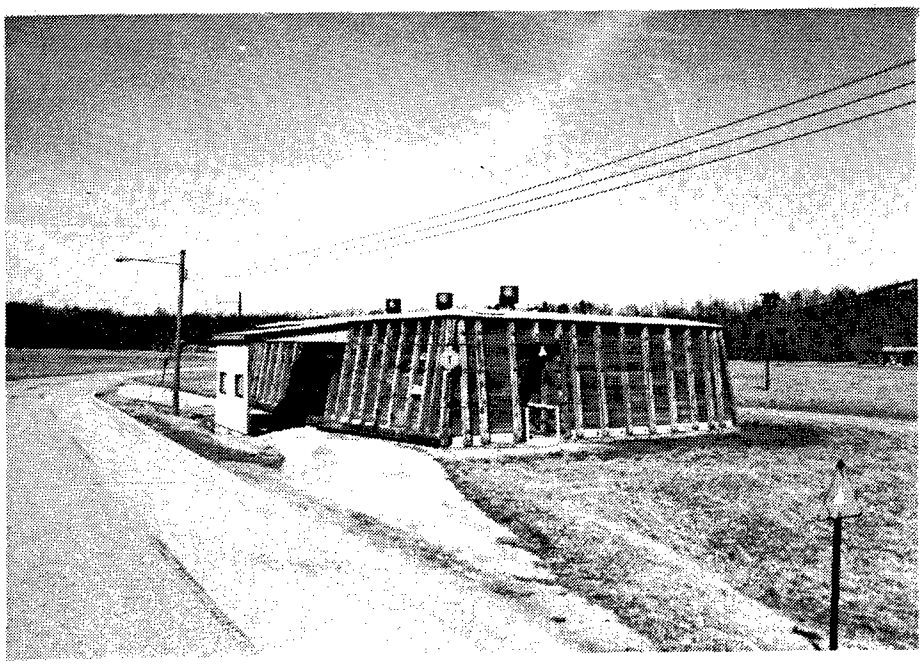

Figure 125. Building 1763: Barricaded Rest House.

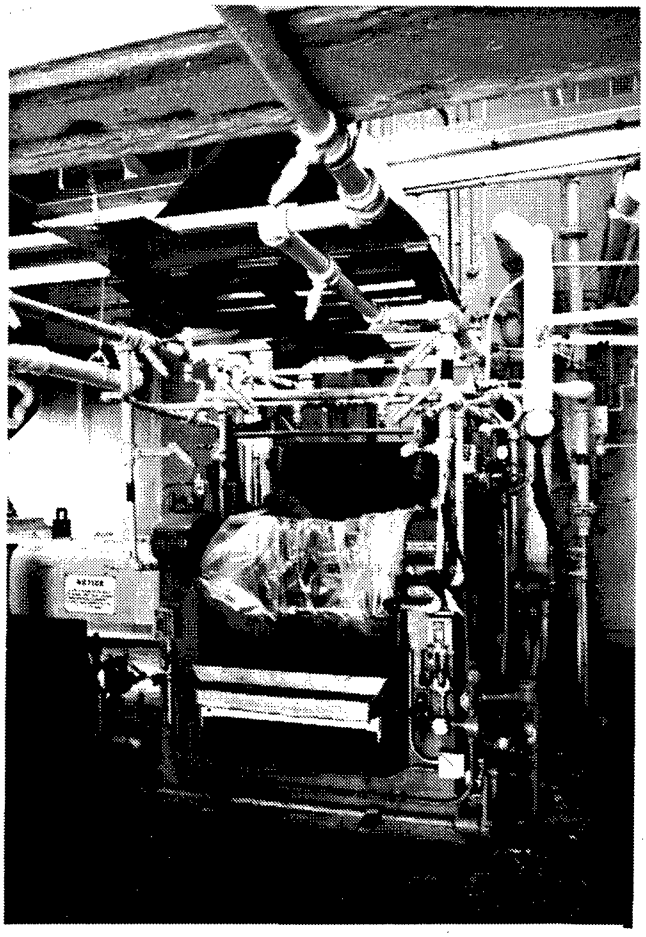

Figure 126. Building 9309-03: Even speed or even mill machine.

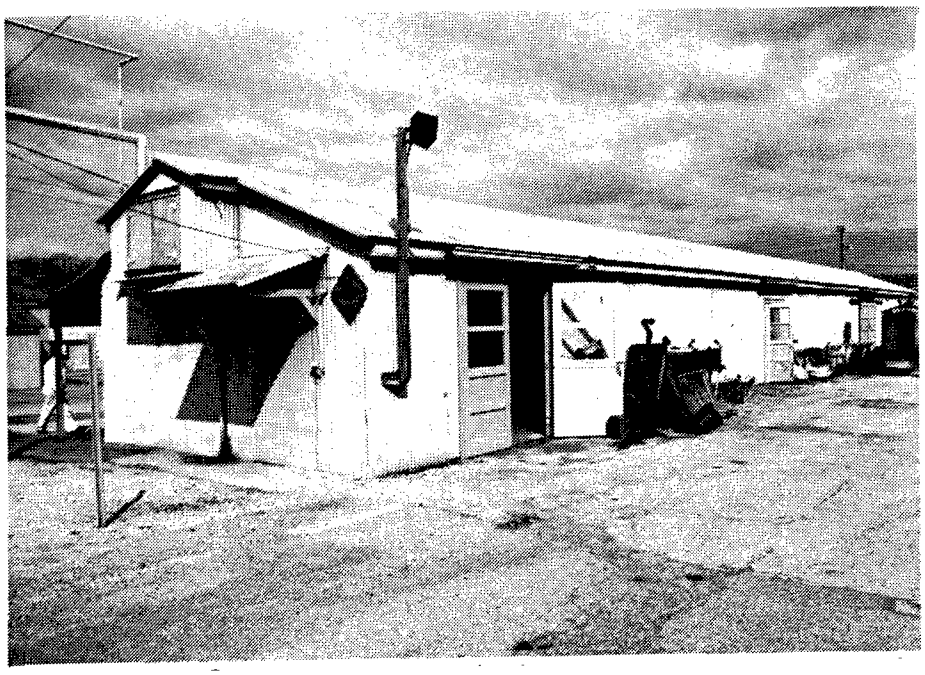

Figure 127. Building 3713: Mobilization Storage.

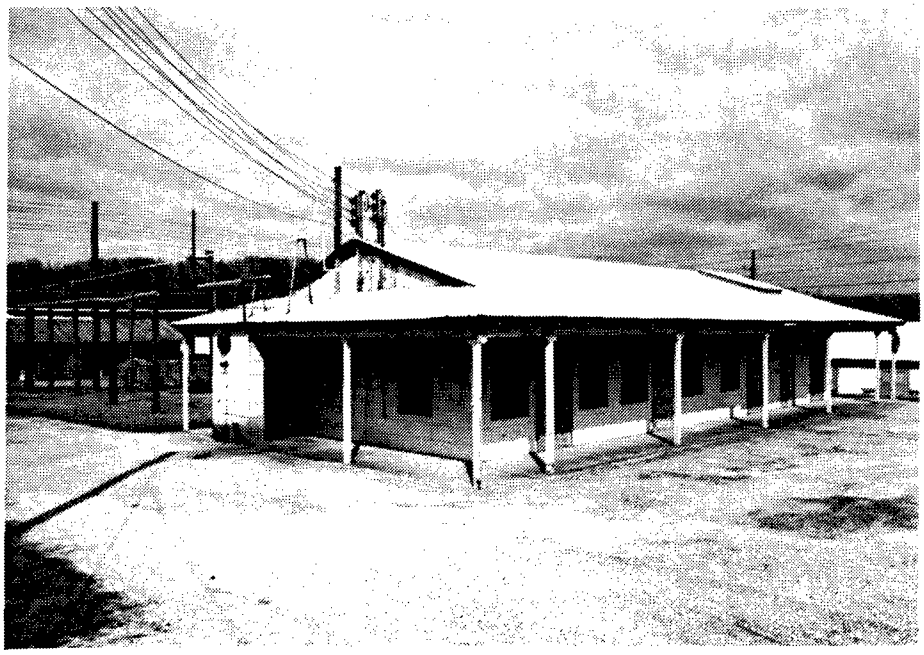

Figure 128. Building 7124-02: Nibbling House with a blow-away panel on the roof.

Figure 129. Building 4912-01: Large Grain Holding House.

Figure 130. Building 4912-02: Small Grain Loading House.

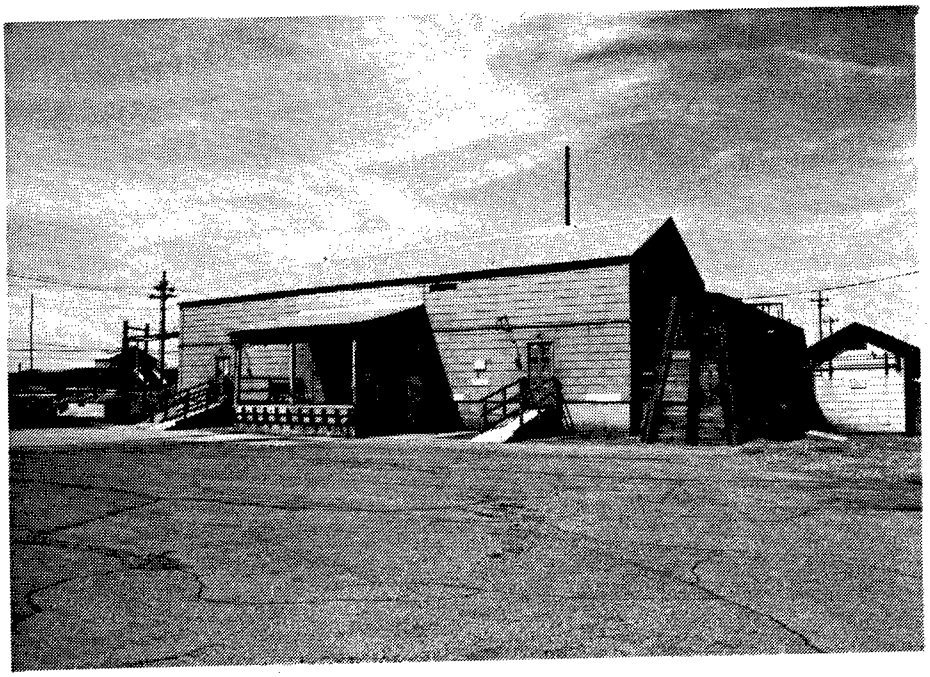

Figure 131. Building 4924-02: Large Saw House with a barricade spanning one wall (the barricade behind the building is obscured).

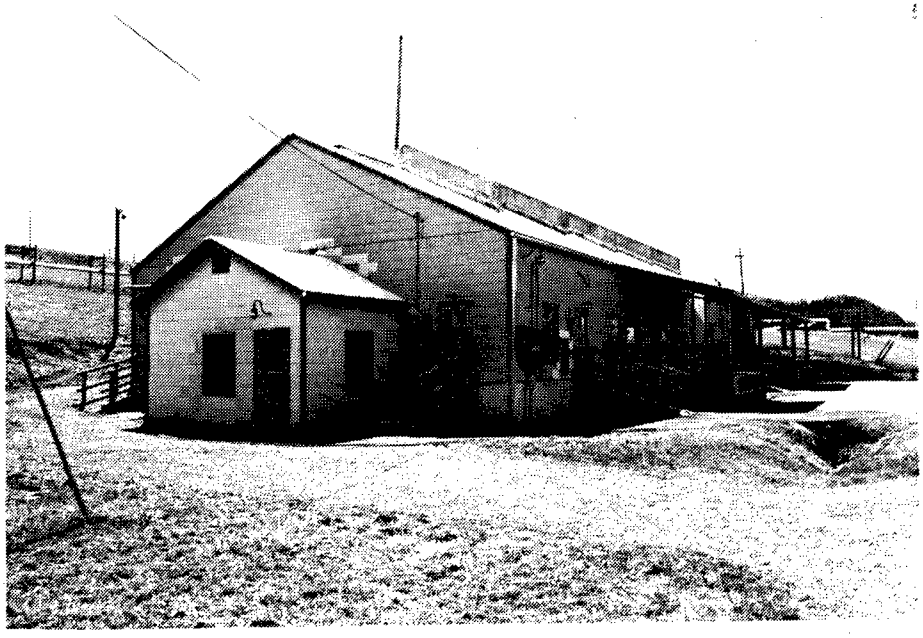

Figure 132. Building 4924-6: Machine and Saw House with cinder block fire breaks not extending beyond the regular walls.

Figure 133. Building 4924-05: MK 90 Finishing Operations.

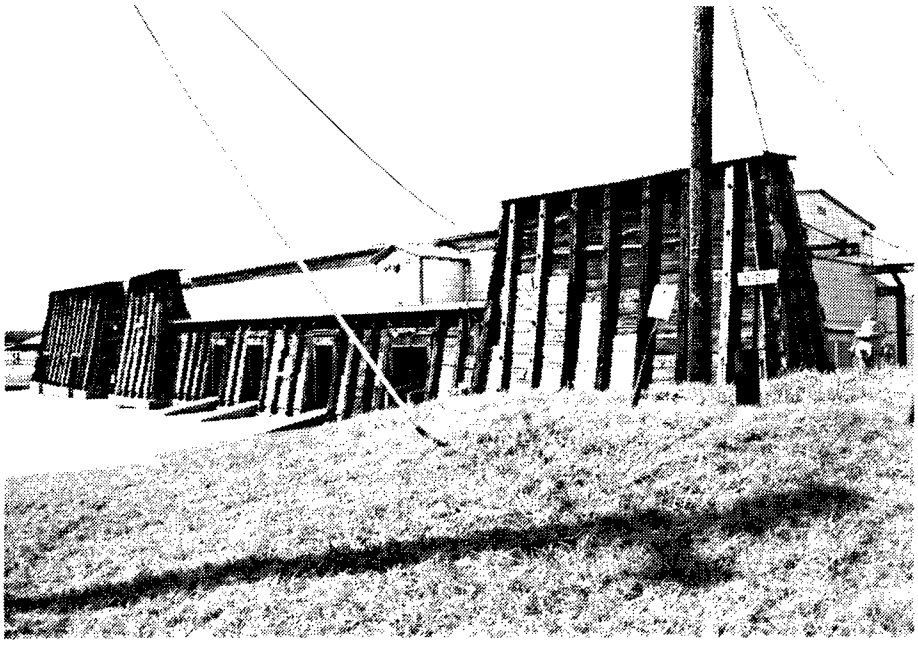

Figure 134. Building 2924-1: Large Motor Load House.

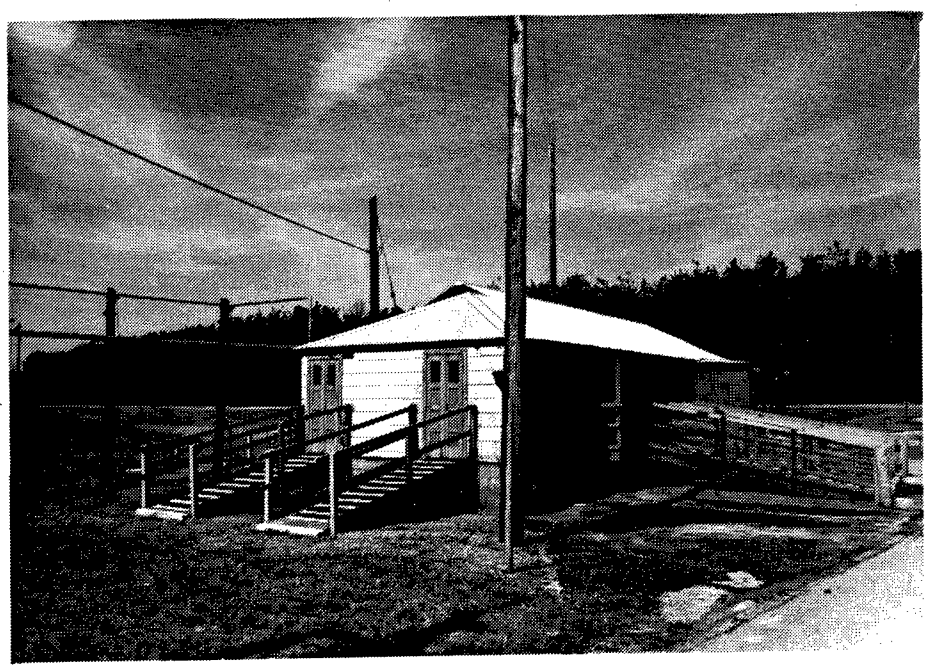

Figure 135. Building 4951-3: Billet Rework House with ramps to accommodate buggies.

SUPPORT FACILITIES FOR MANUFACTURING

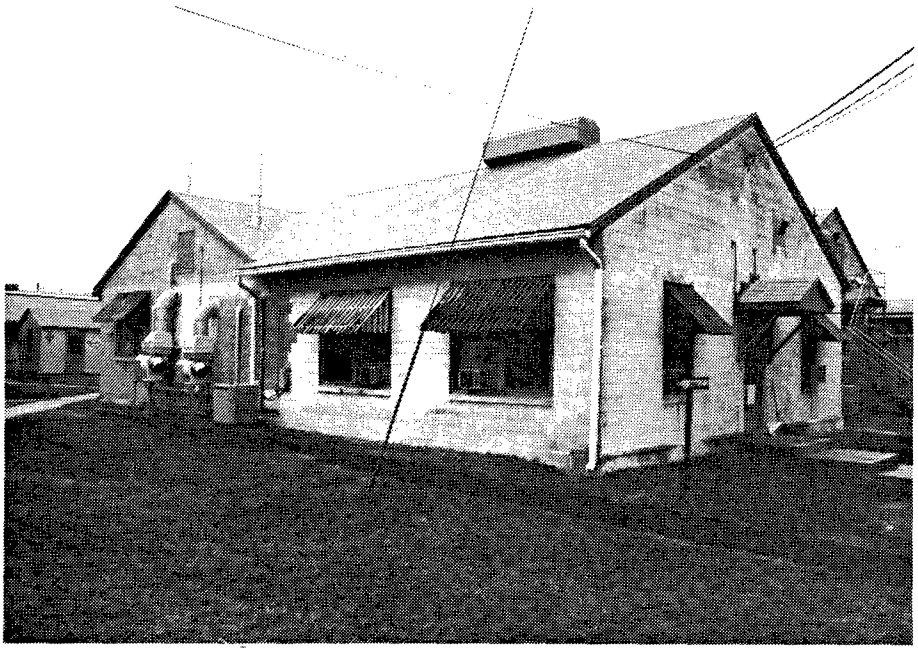

Figure 136. Building 201: Propellant Lab.

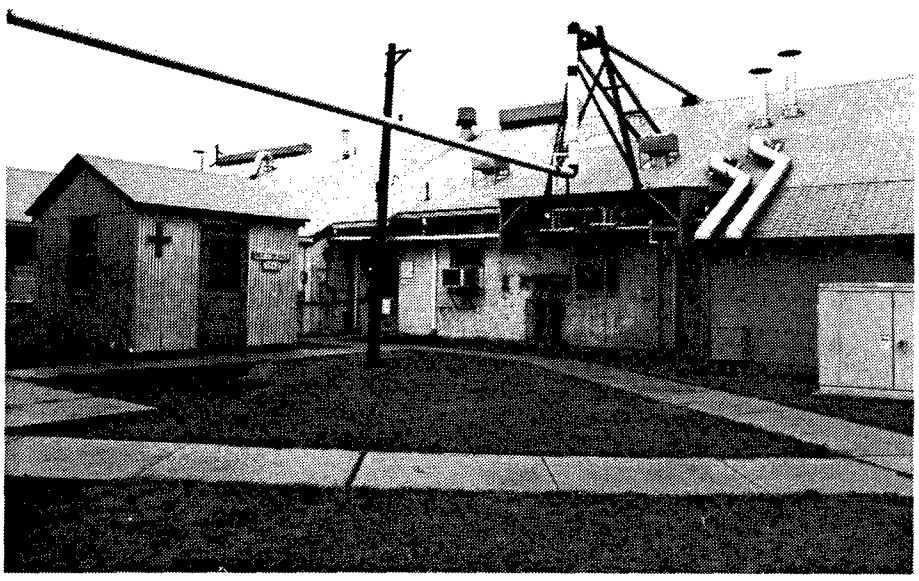

Figure 137. Building 201 and Building 3562: Propellant Lab (right) and an Inert Storage Building (left), respectively.

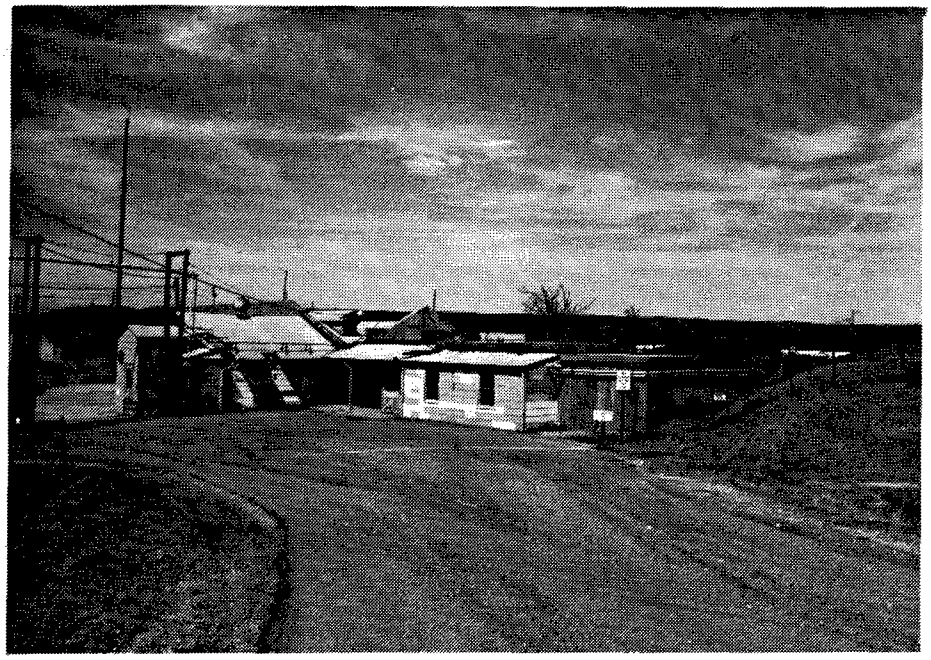

Figure 138. Building 6401: Test House where ballistics were "tested" and flawed propellants were withheld; also notice the tar and chip berm on the far side of this building.

Figure 139. Building 203: Garage which has served as a data center in recent years.

Figure 140. Building 500: The Combined Shop where metal and woodworking took place. Devices were designed and manufactured here to meet OSHA safety laws that required safety cages, bars, and panels on much of the plant equipment.

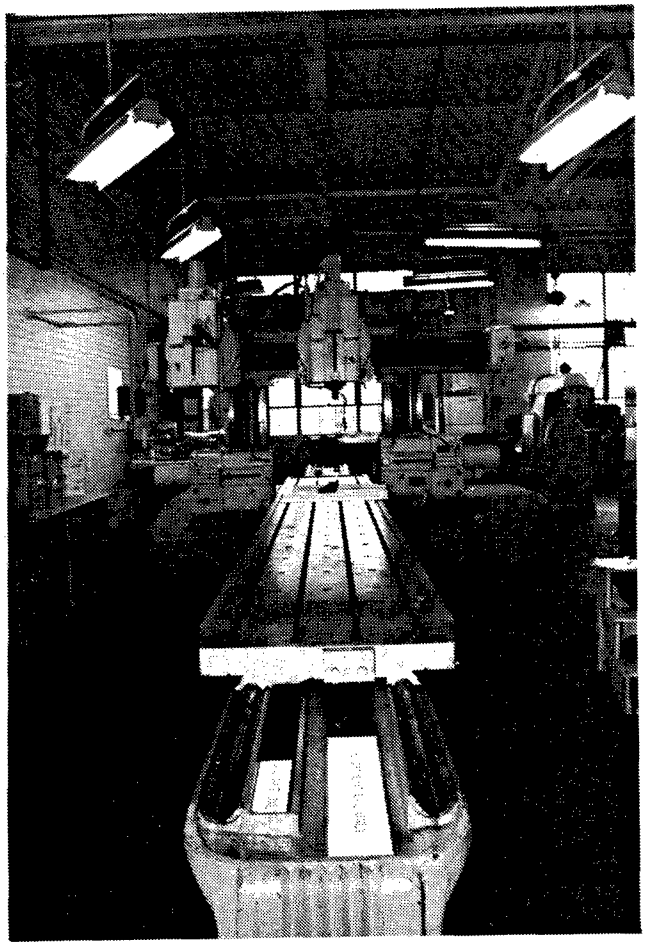

Figure 141. Building 500: Ingersoll bridge metal machine located in the Machine Shop.

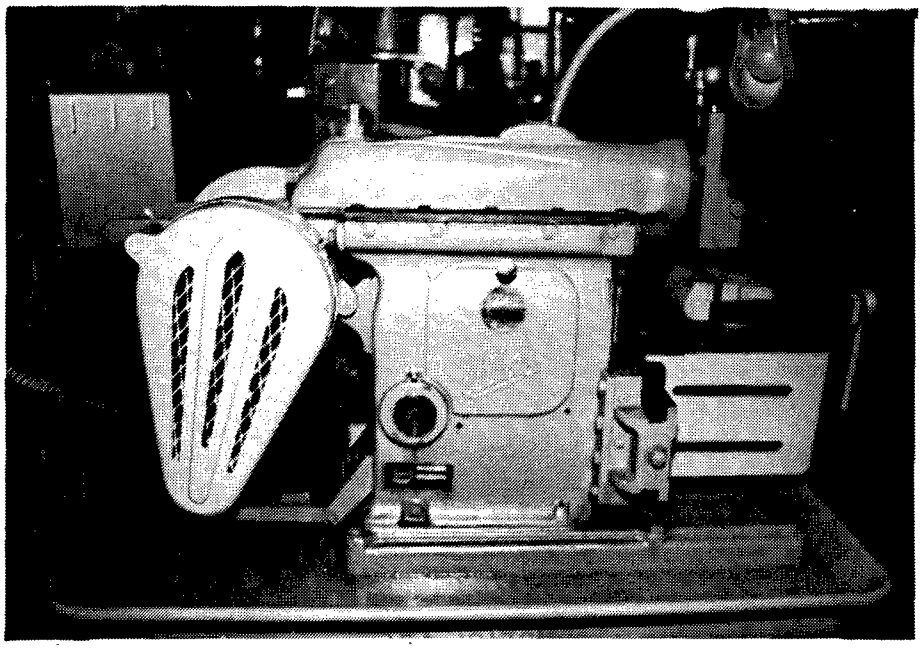

Figure 142. Building 500: A metal shaper manufactured between 1944-1947 by Atlas of Kalamazoo, Michigan, located in the Machine Shop.

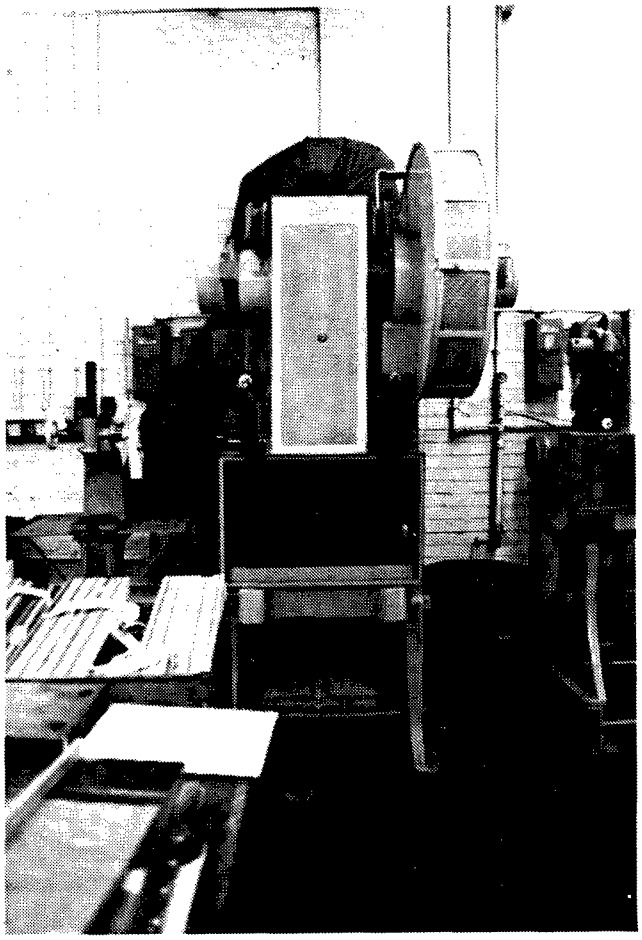

Figure 143. Building 500: A punch press, Model #5, by Loshbough-Jordan of Elkhart, Indiana, located in the Machine Shop.

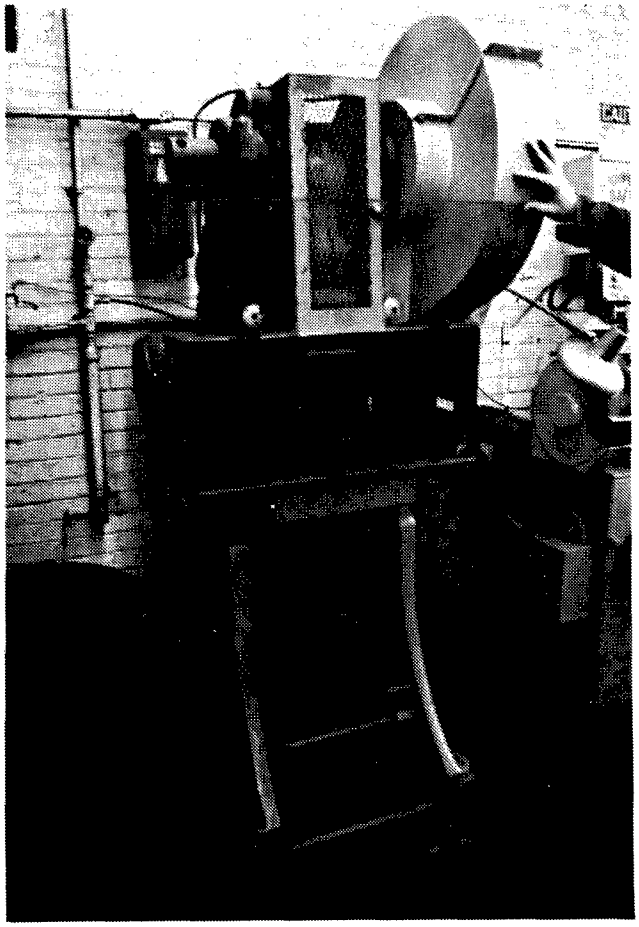

Figure 144. Building 500: A punch press, Model #2, by Loshbough-Jordan of Elkhart, Indiana, located in the Machine Shop.

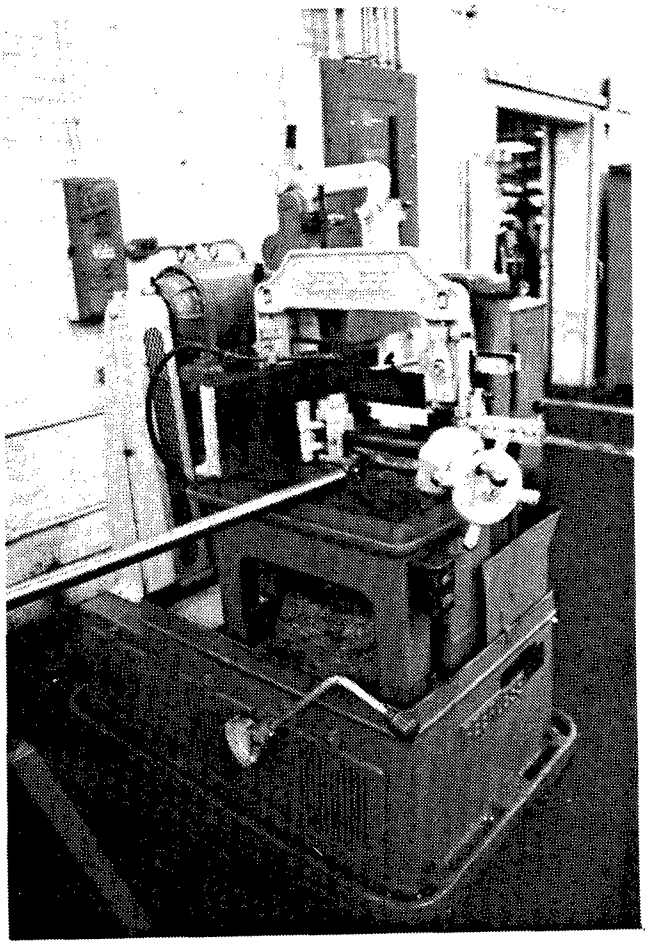

Figure 145. Building 500: A Peerless metal saw located in the Machine Shop.

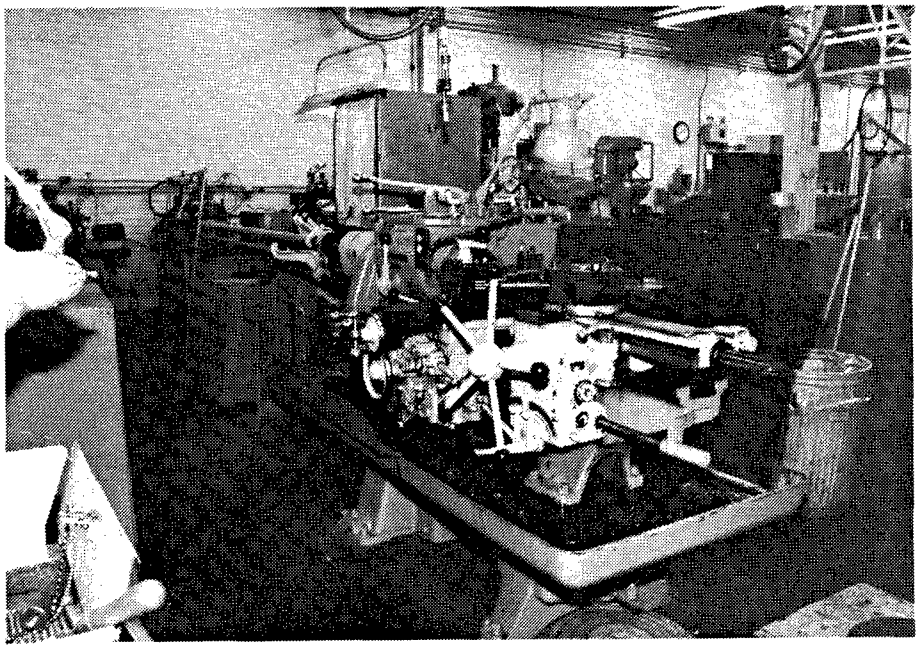

Figure 146. Building 500: A Turrat Model #3 by Warner and Swasen, Cleveland, Ohio, located in the Machine Shop.

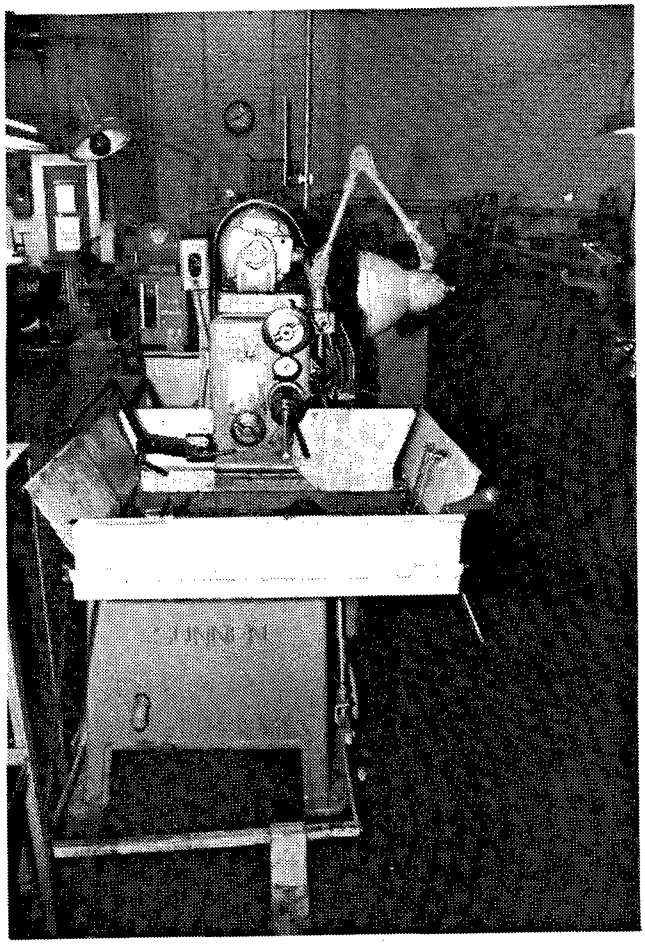

Figure 147. Building 500: A Honing by Sunnen of Saint Louis, Missouri, located in the Machine Shop.

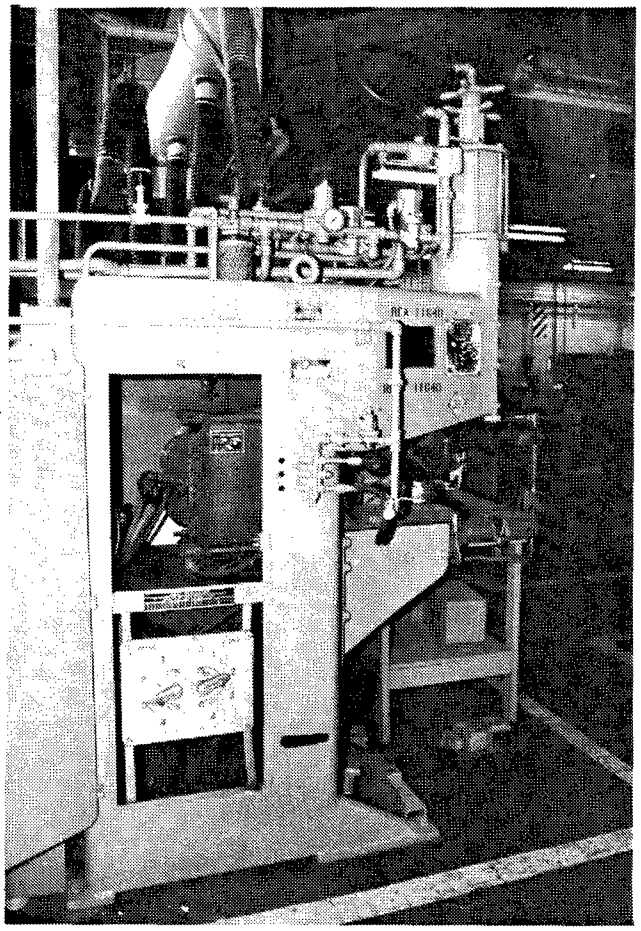

Figure 148. Building 500: A spot welder manufactured by National Electric Welding, Bay City, Michigan, located in the Sheet Metal Shop.

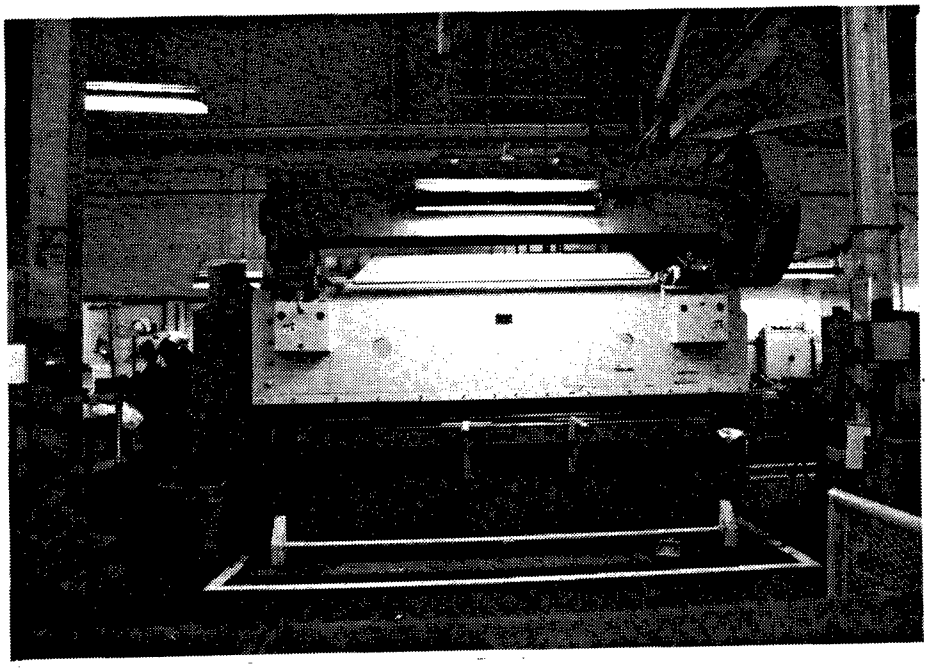

Figure 149. Building 500: A sheet metal press manufactured by Columbia Machinery and Engineering of Hamilton, Ohio, located in the Mill Right Shop.

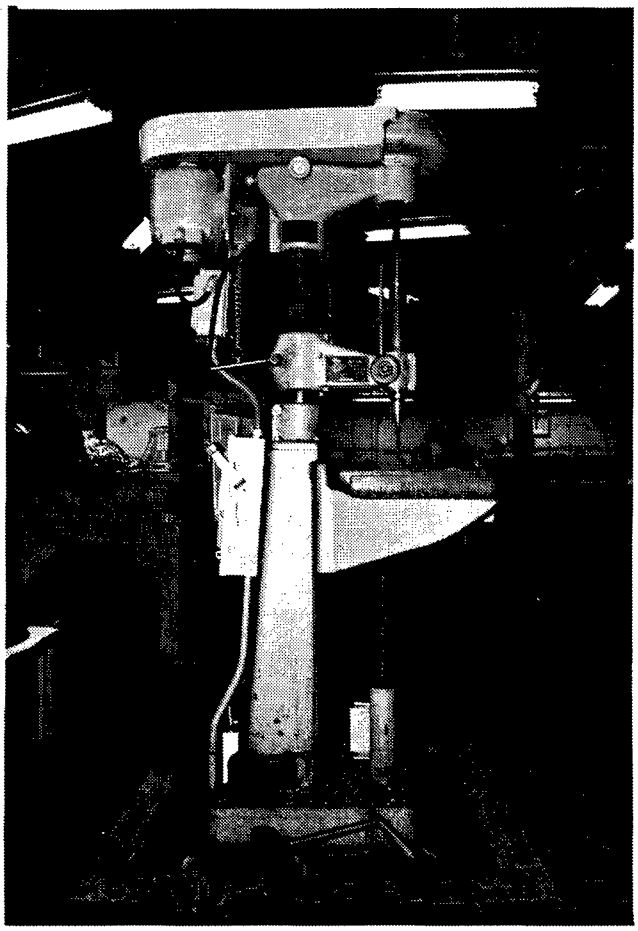

Figure 150. Building 500: A drill press, Model #16, manufactured by Buffalo Machinery, Buffalo, New York, located in the Mill Right Shop.

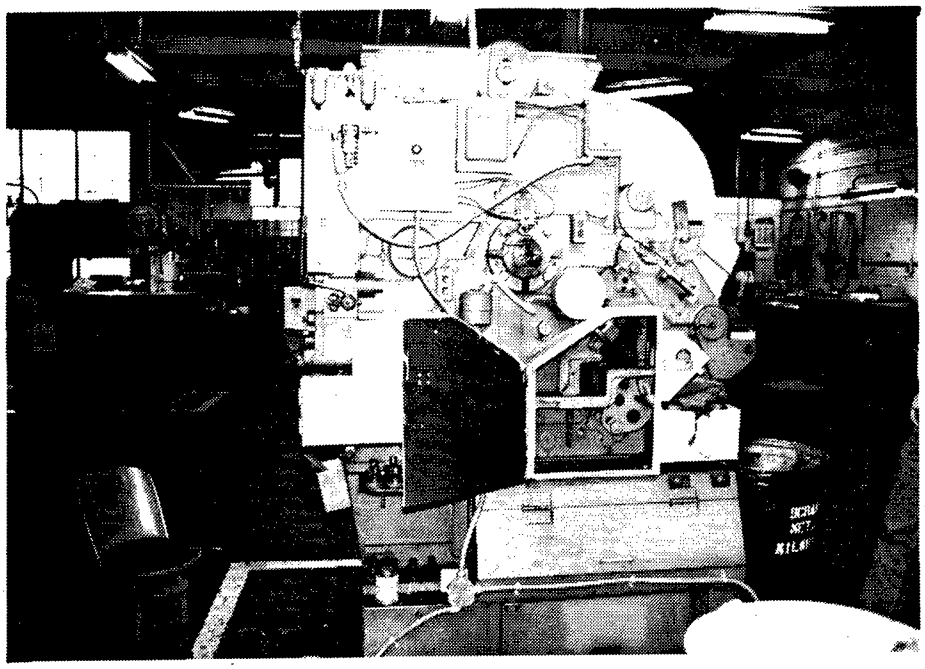

Figure 151. Building 500: An iron worker manufactured by Buffalo Machinery, Buffalo, New York, located in the Mill Right Shop.

Figure 152. Building 500: A detail of the wooden floor located in the Mill Right Shop. The darker section of blocks is original, and the lighter section consists of replacement blocks.

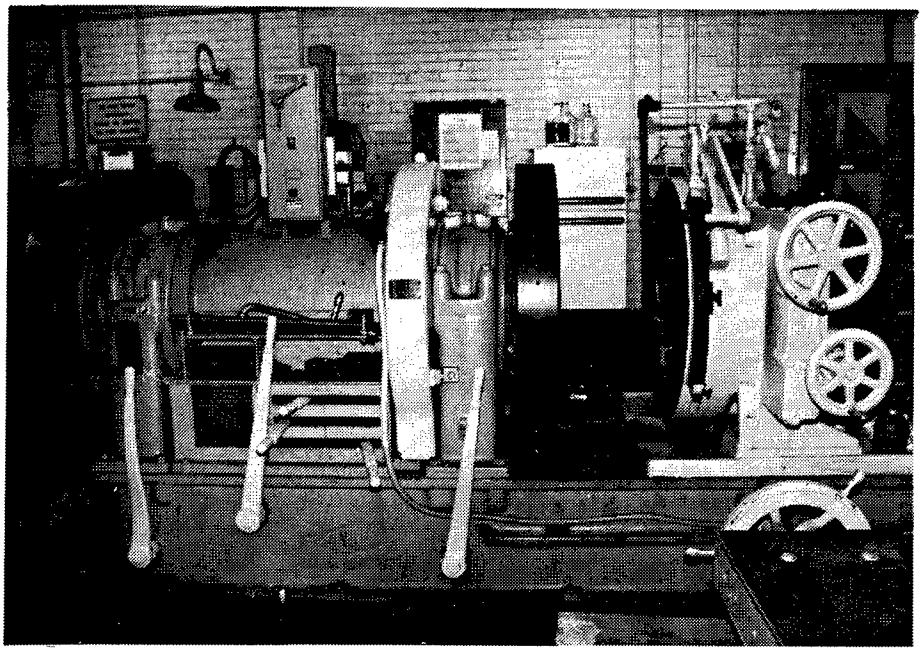

Figure 153. Building 500: A Landis pipe threading machine for six- to twelve-inch pipe, located in the Pipe Shop.

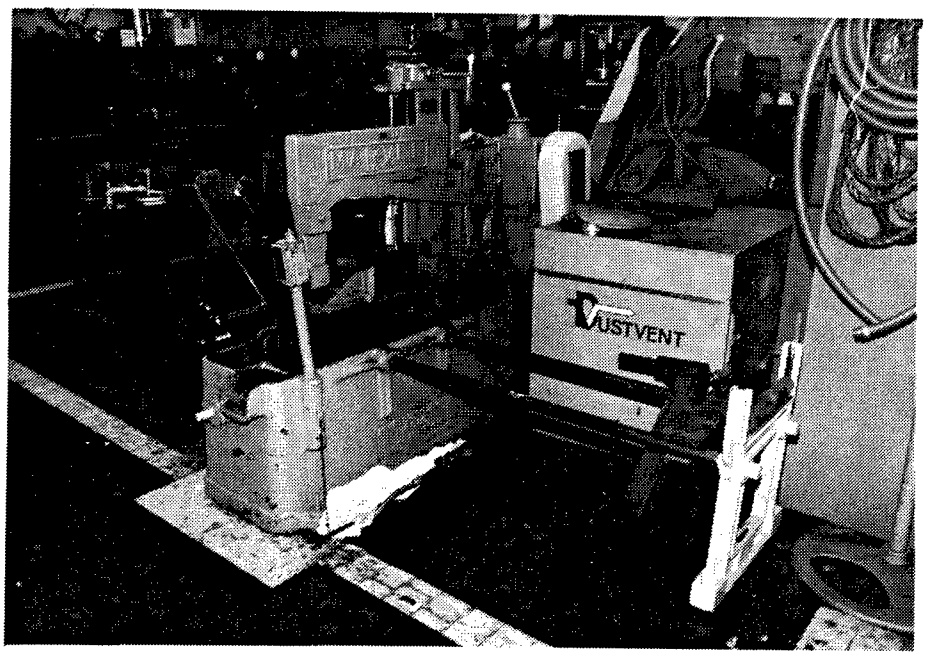

Figure 154. Building 500: A Marvel #9 pipe saw manufactured by Armstrong-Blum Manufacturing Co., Chicago, Illinois, located in the Pipe Shop.

Figure 155. Building 501: Locomotive Shop.

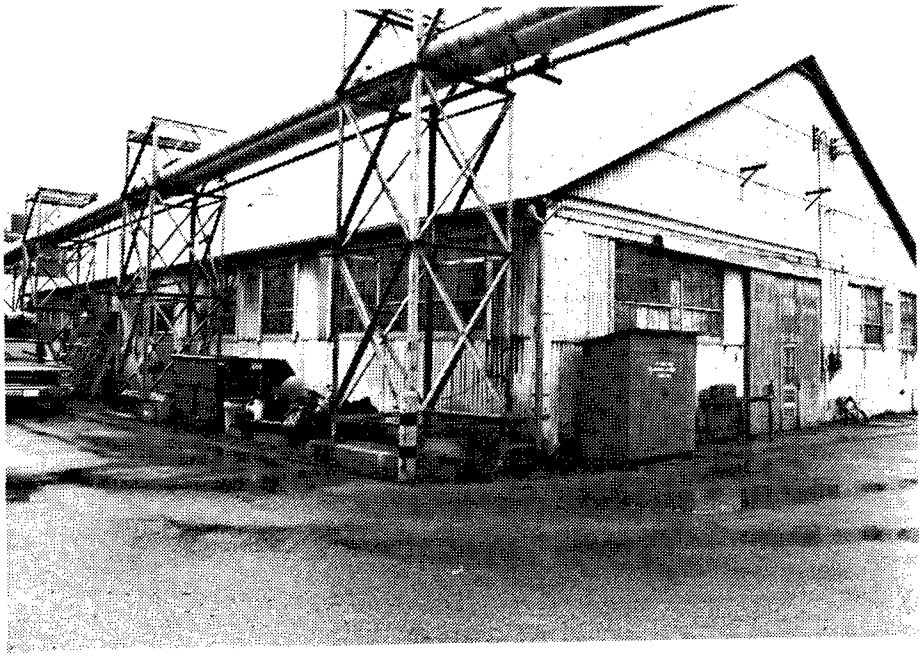

Figure 156. Building 512: Line Crew Shop sided with asbestos and fiberglass.

Figure 157. Building 520: Weld Shop.

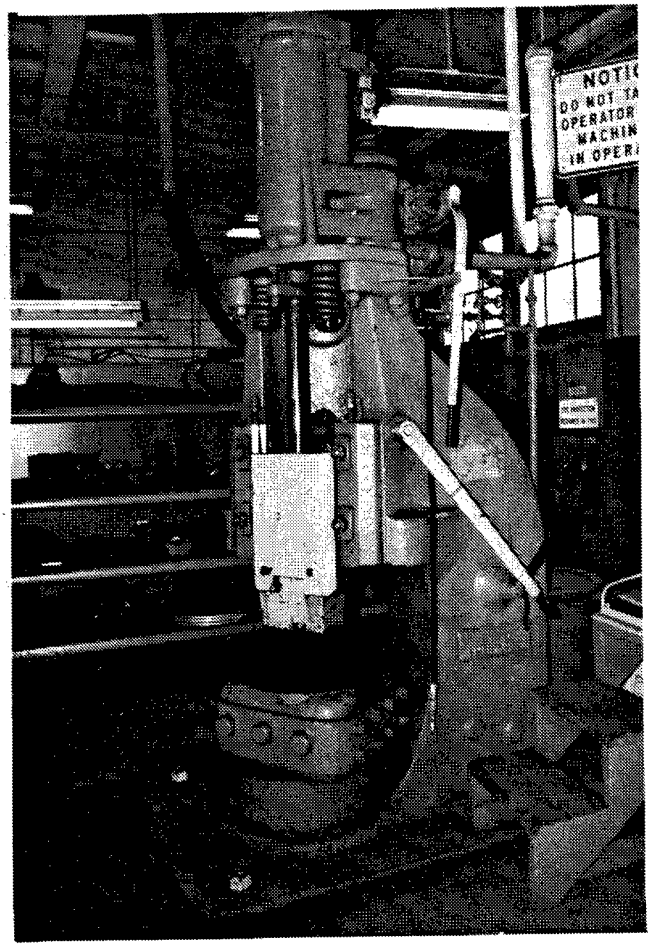

Figure 158. Building 520: An 800-pound, single-frame steam hammer manufactured in 1918 by Baldwin-Lima Hamilton.

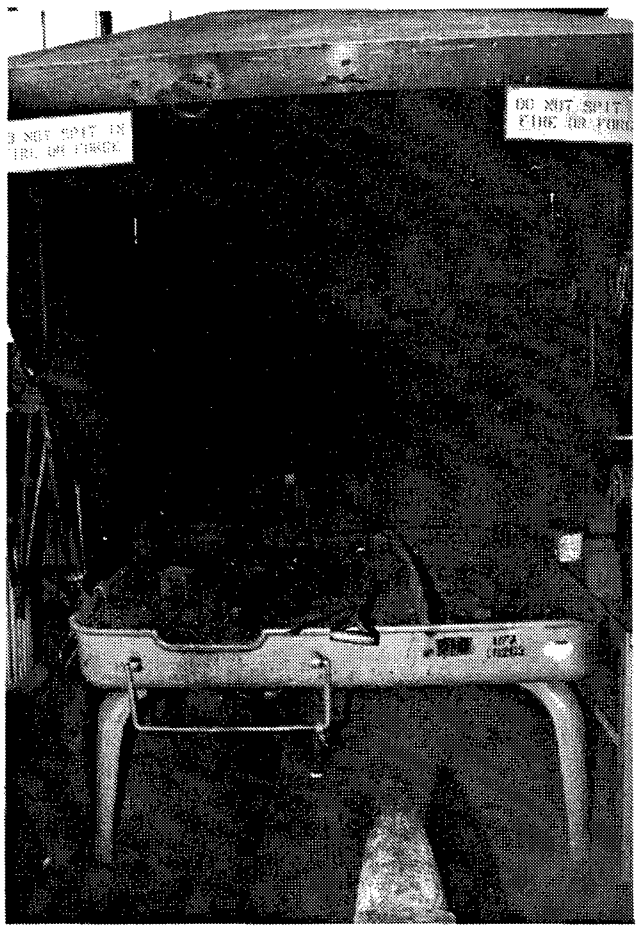

Figure 159. Building 520: Interior view of the Weld Shop showing a forge manufactured by Champion Blower and Forge Company.

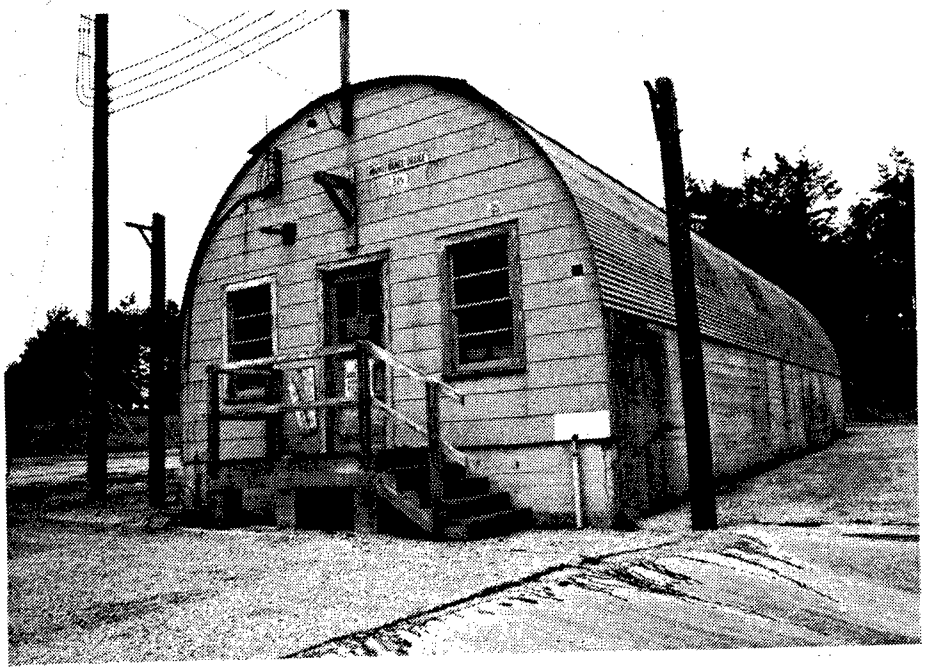

Figure 160. Building 225: Quonset Hut functioning as a Maintenance Shop.

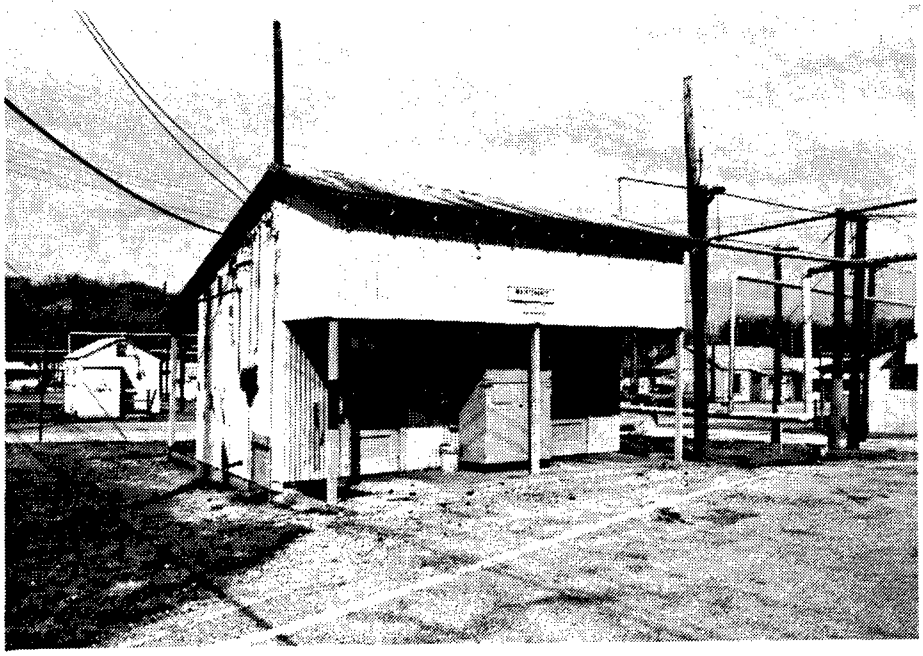

Figure 161. Building 3727: This Maintenance Shop is currently used for storage.

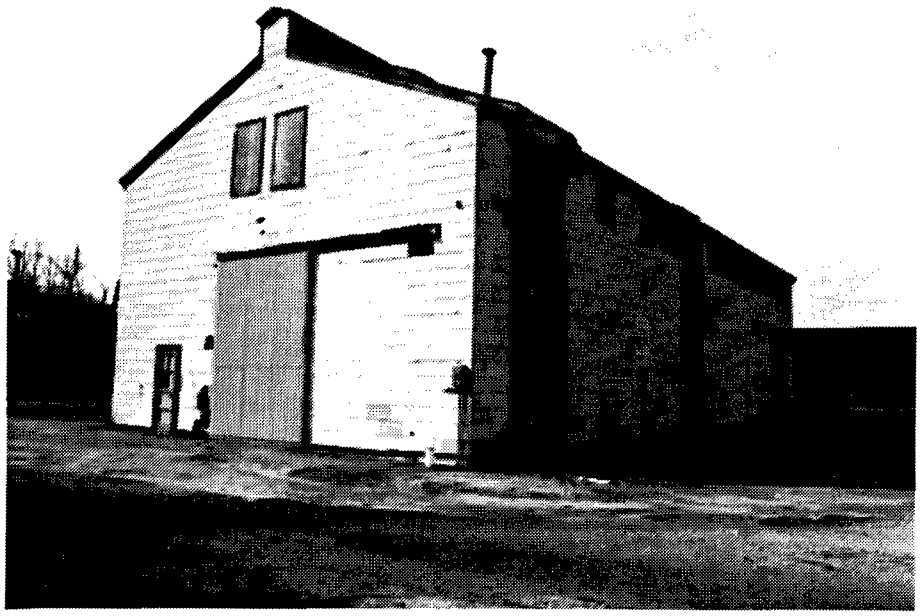

Figure 162. Building 4421-08: Equipment and Repair Shop originally used as a Rigger House. The tall board panels on the right served as doors to accommodate cranes.

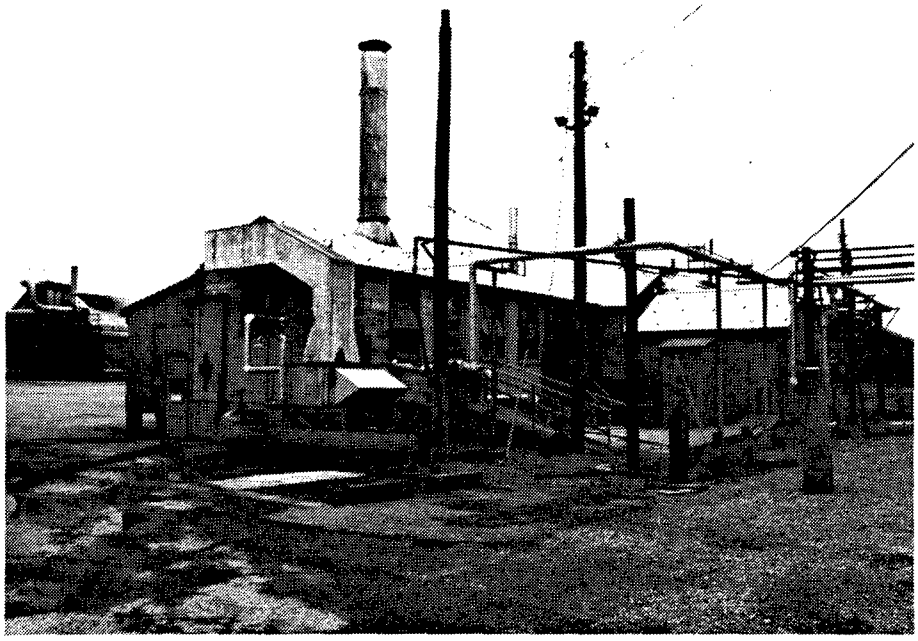

Figure 163. Building 4942: Screen Caustic Cleaning House where screens involved in the manufacturing of ammunition were washed.

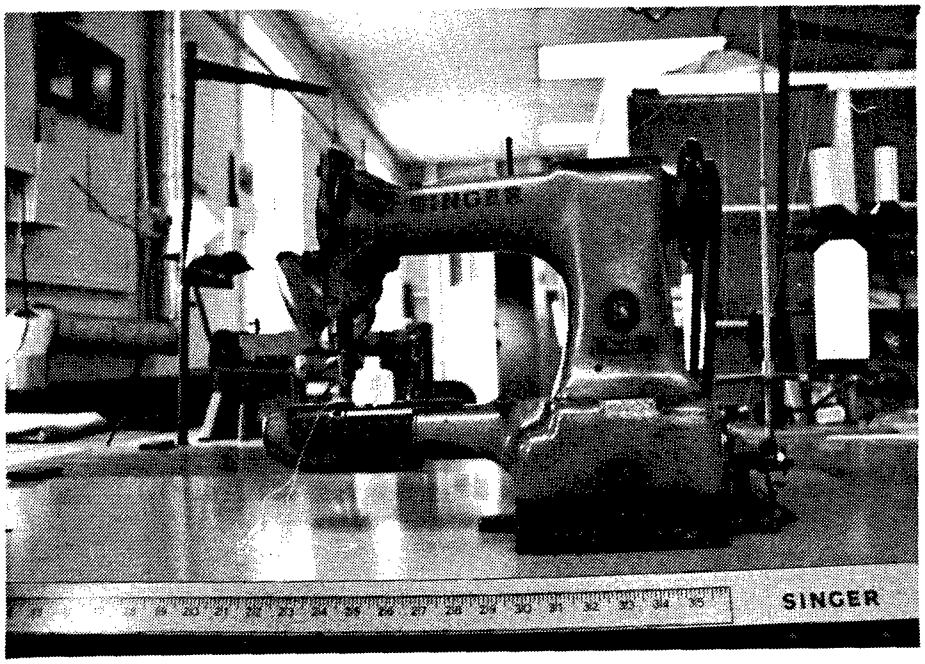

Figure 164. Building 4705-4: Singer sewing machine in the Laundry Building.

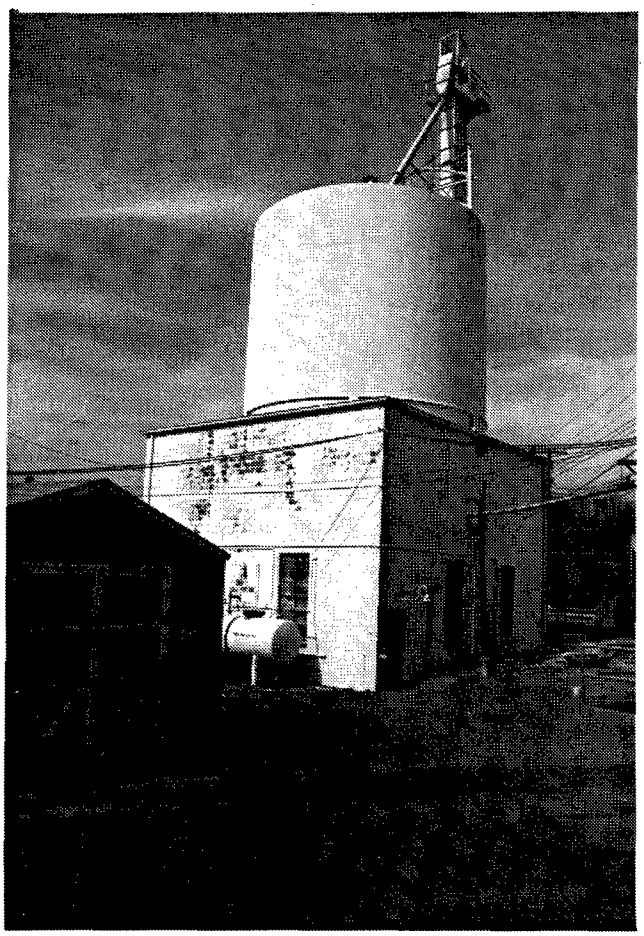

Figure 165. Building 420-01: "A" and "B" Line Acid Waste Water Plant.

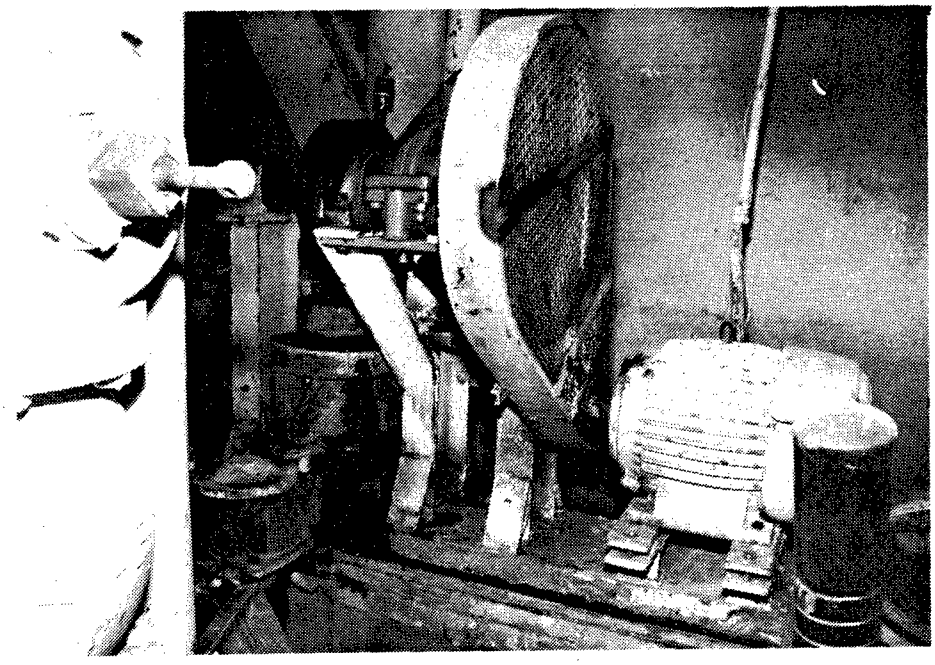

Figure 166. Building 420-01: Auxiliary sludge pump.

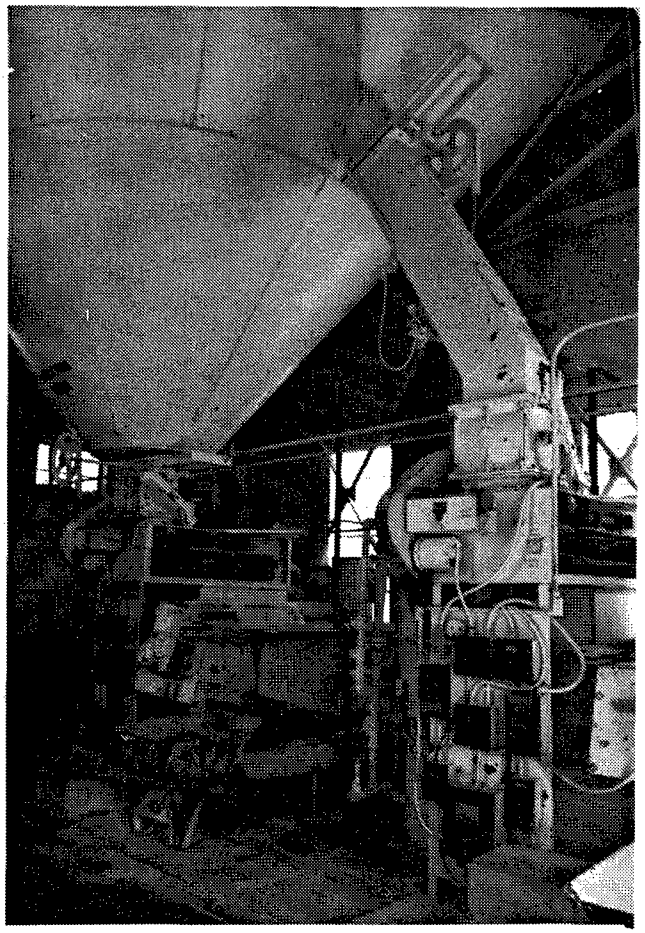

Figure 167. Building 420-01: Slaker that separates water from solvents.

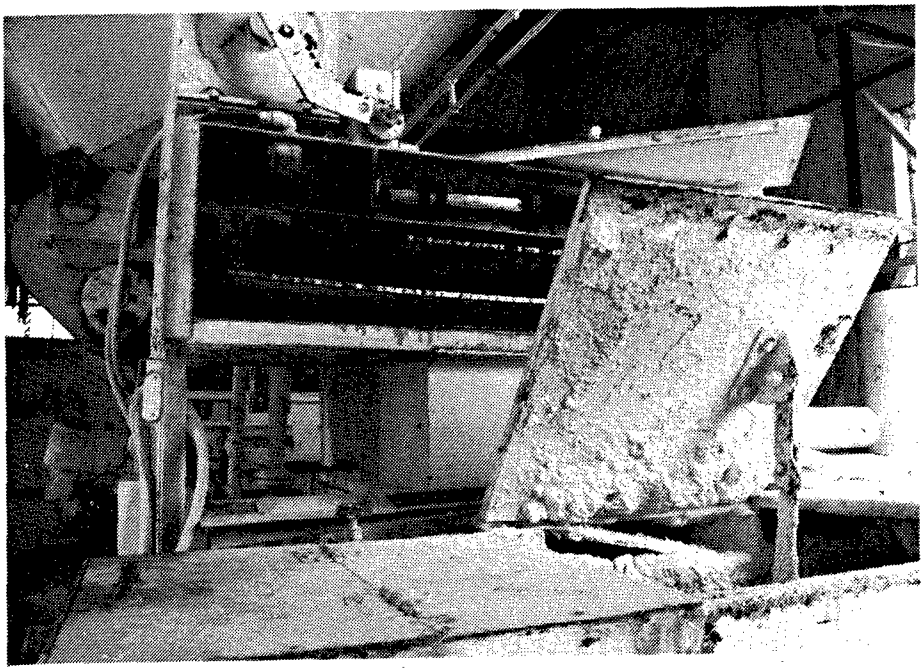

Figure 168. Building 420-01: Close-up of Slaker.

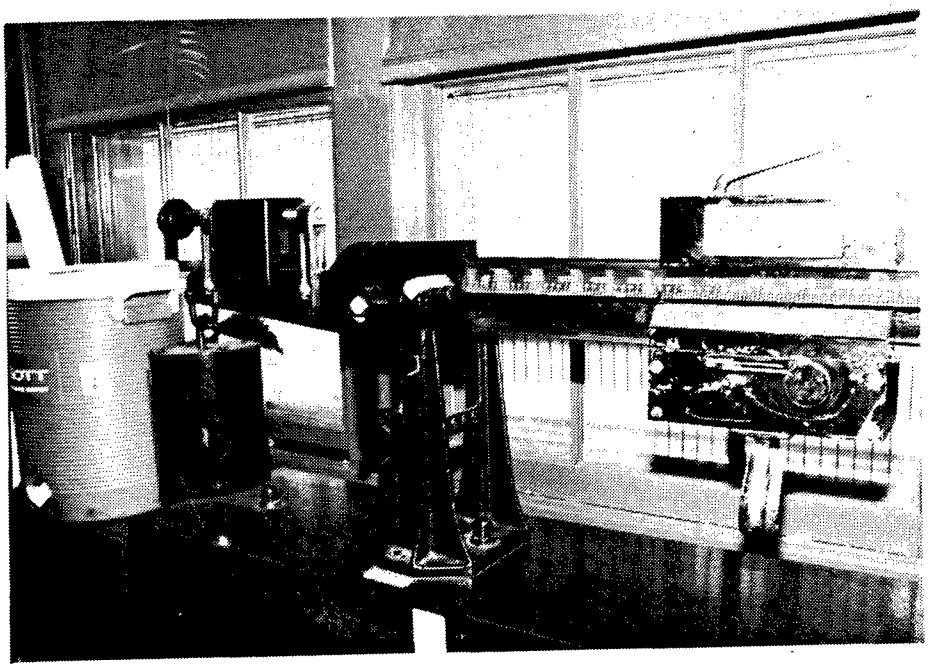

Figure 169. Building 919: Close-up of rail car scale.

SHIPPING AND STORAGE FACILITIES

Figure 170. Building 236: Storage/Workshop for the staff village recreation equipment.

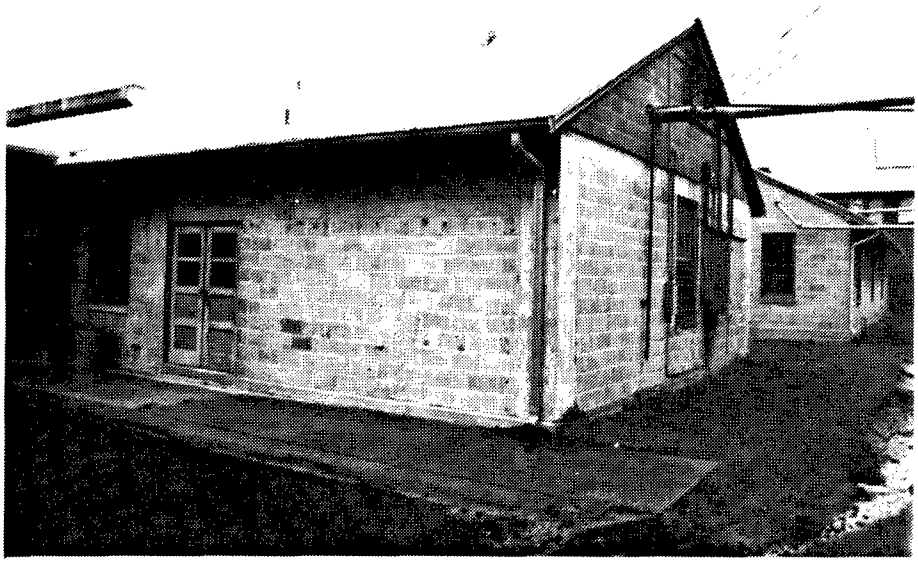

Figure 171. Building 239: Storage Building connected to Building 213 by a modern addition.

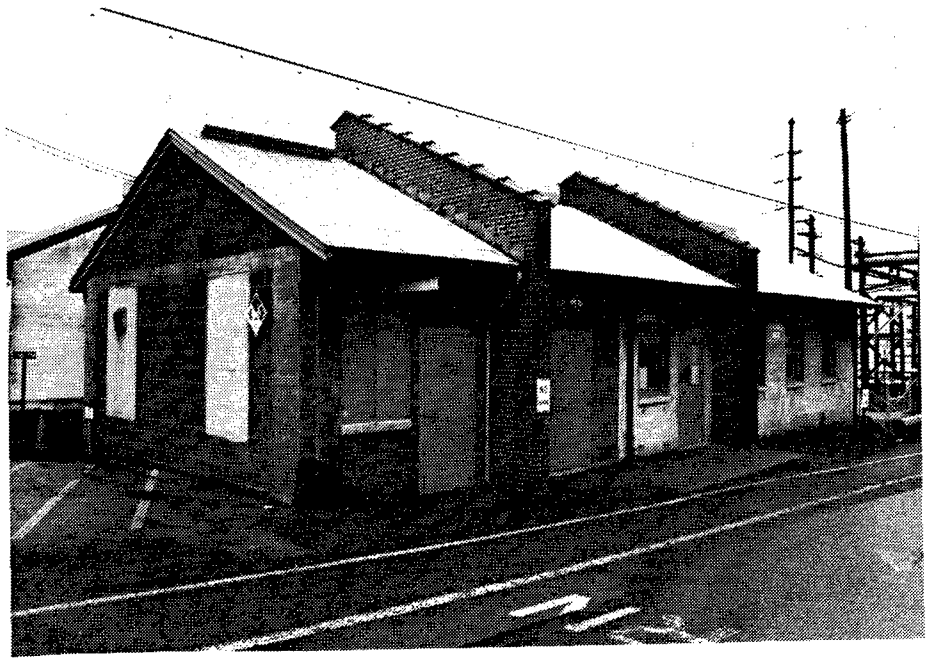

Figure 172. Building 519: Laboratory Storage with brick fire walls dividing the building into thirds to prevent an explosion and/or fire from spreading to the rest of the building.

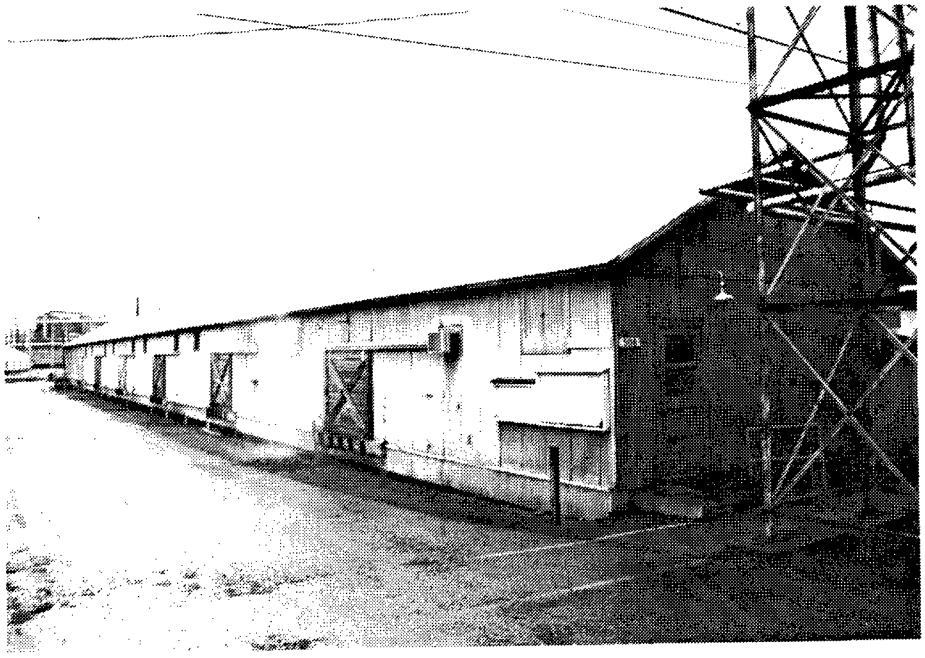

Figure 173. Building 508: Salvage and Surplus Property Storage.

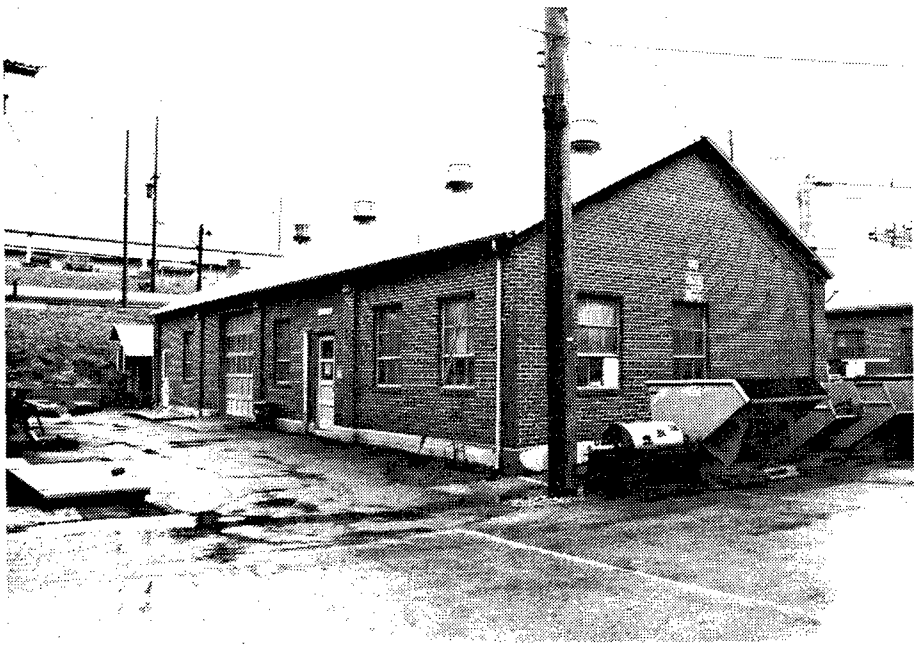

Figure 174. Building 514: General Storehouse used for the storage of metal.

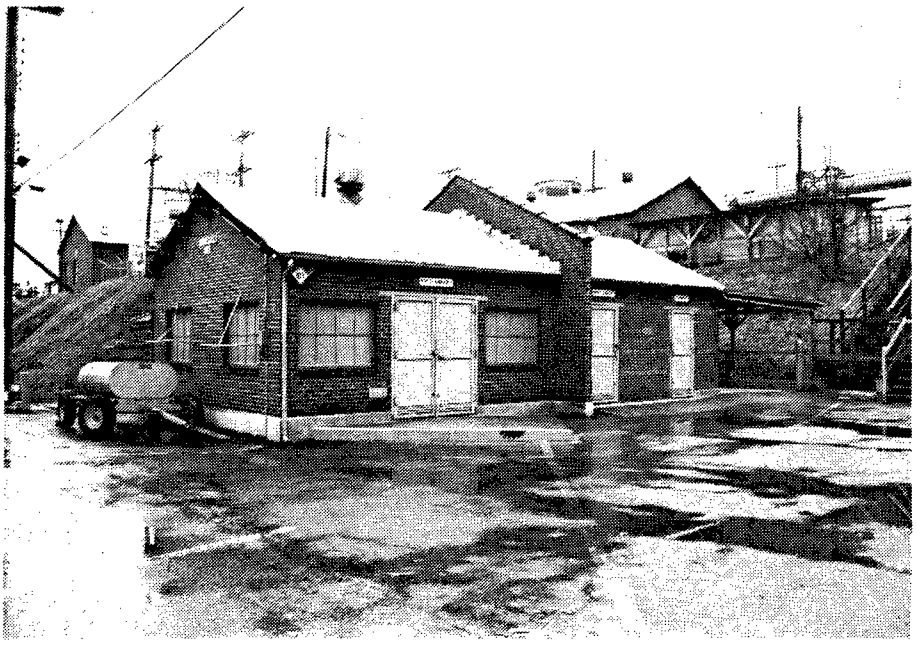

Figure 175. Building 521: Gas Cylinder Store (for welding gas); note the fire wall.

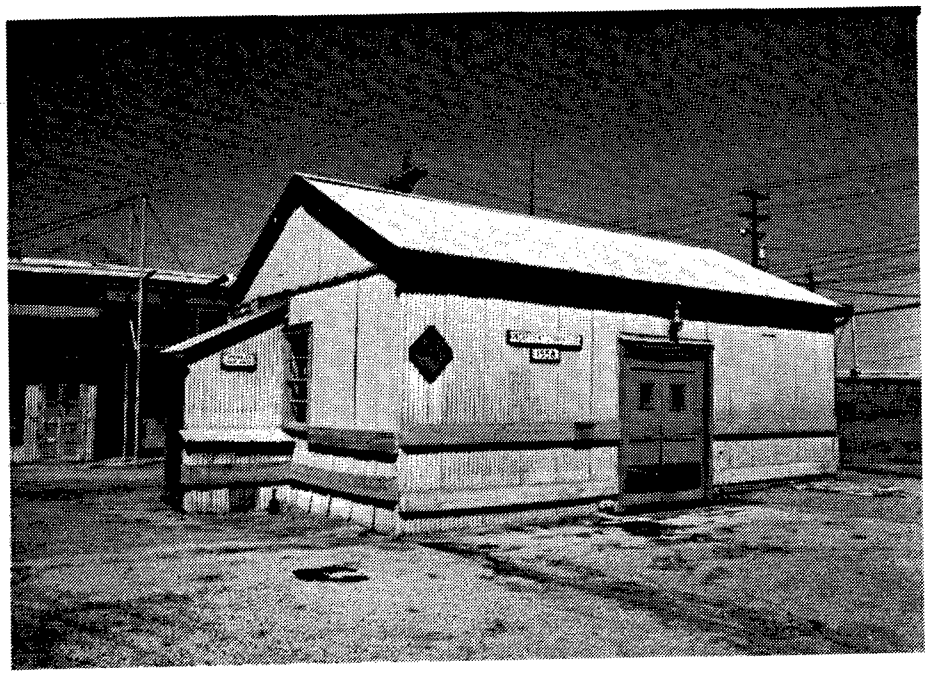

Figure 176. Building 1550: Ingredient Store House.

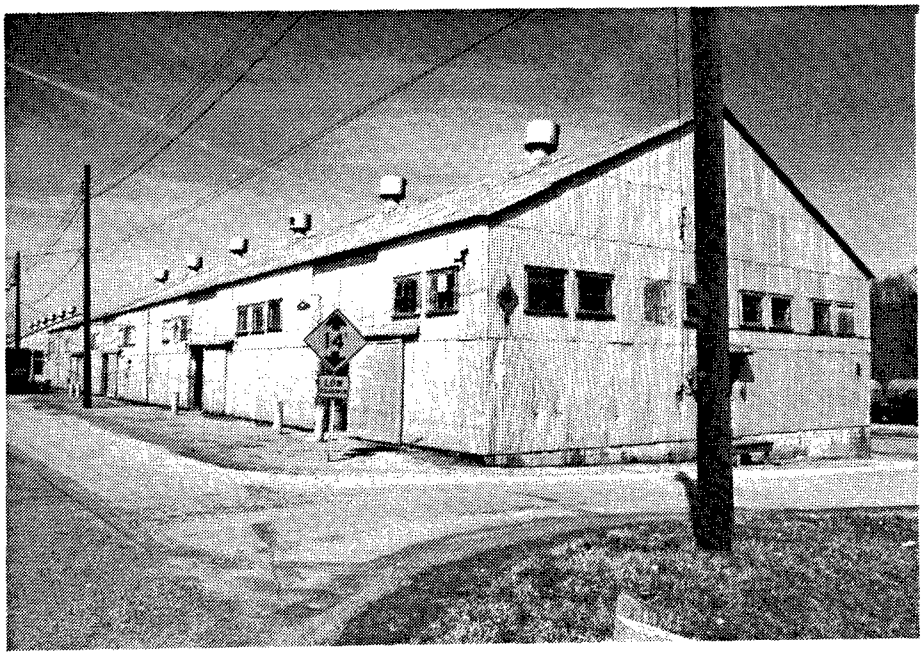

Figure 177. Building 1888: Box Storage Building with aluminum siding.

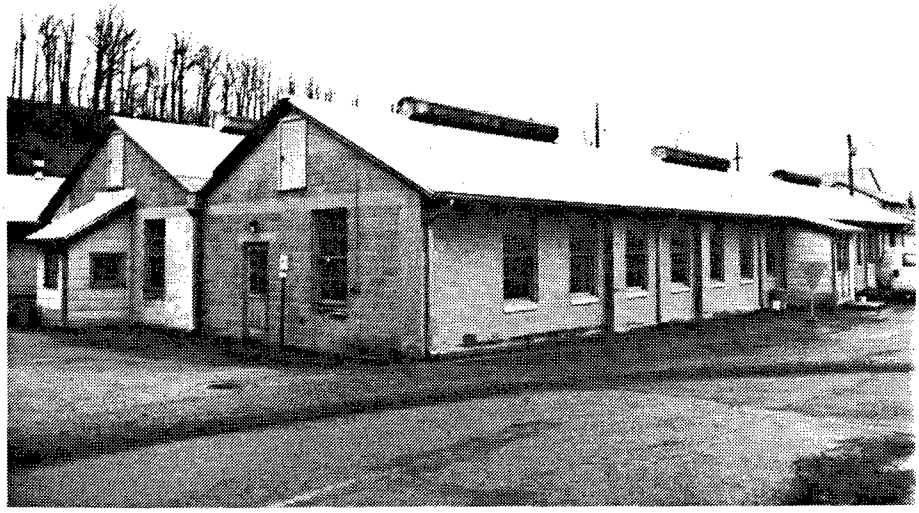

Figure 178. Building 213: General Purpose Warehouse that houses the plant archives.

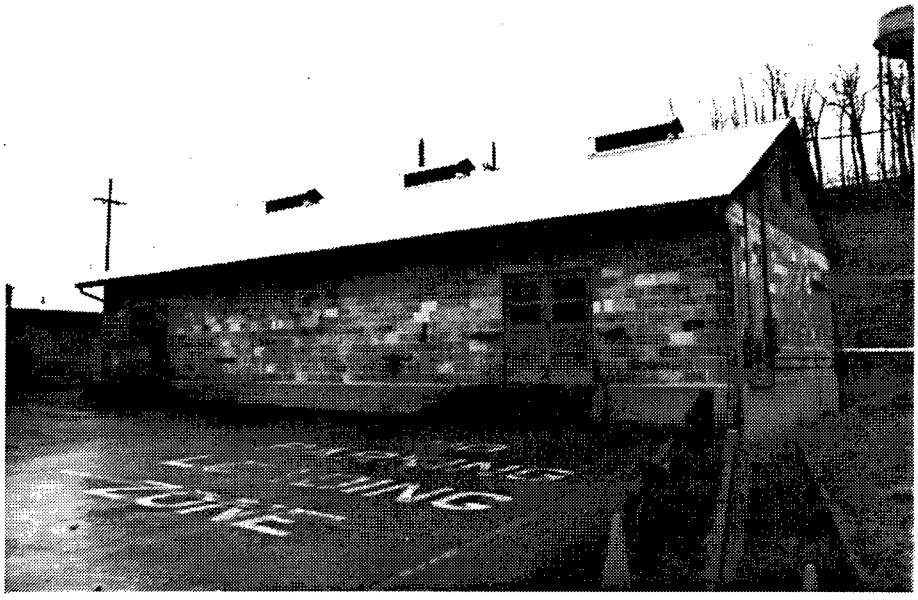

Figure 179. Building 4723: This General Purpose Warehouse contains two walk-in wooden refrigerators.

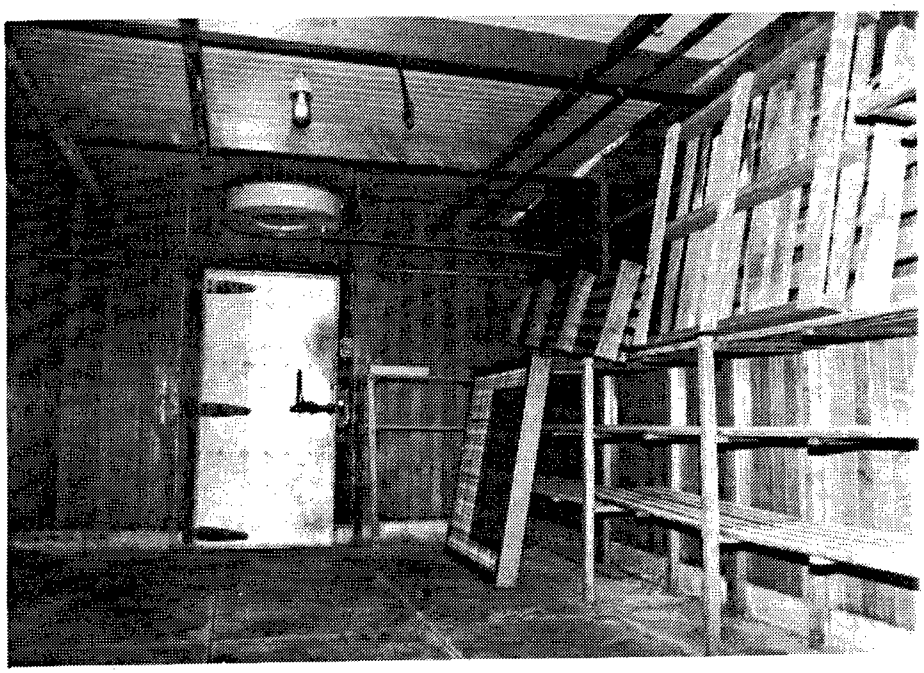

Figure 180. Building 4723: Refrigerator by Hill Cold Storage, Trenton, New Jersey.

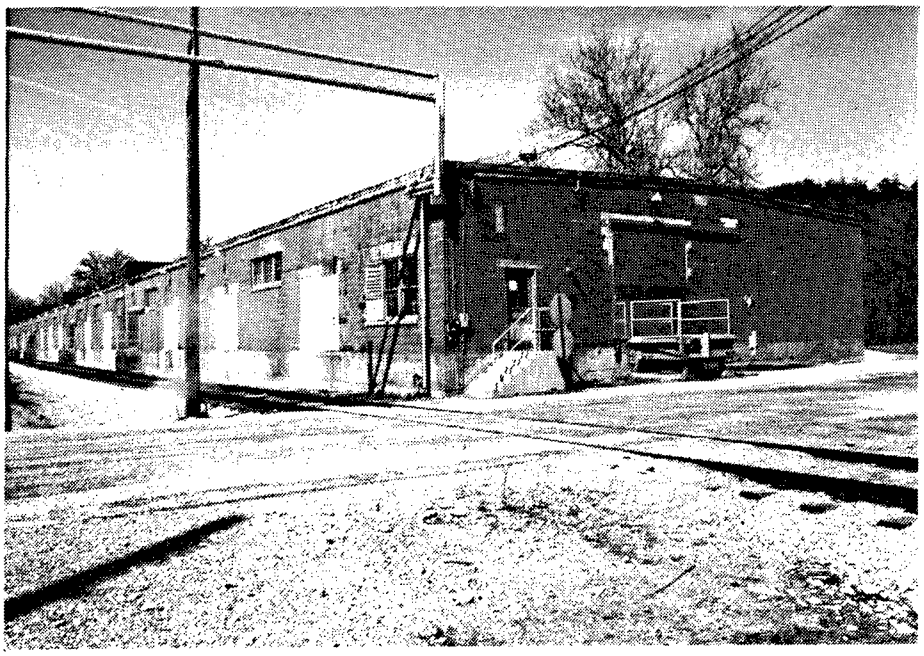

Figure 181. Building 9387-1: Cinder Block Warehouse.

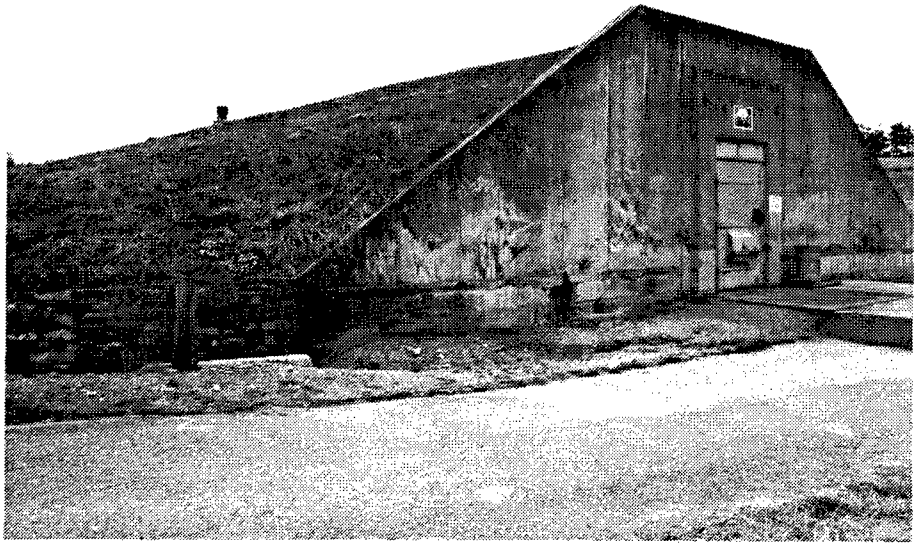

Figure 182. Building 1107: Igloo Storage Magazine with a ventilator extending up from the back of this earthen-covered structure.

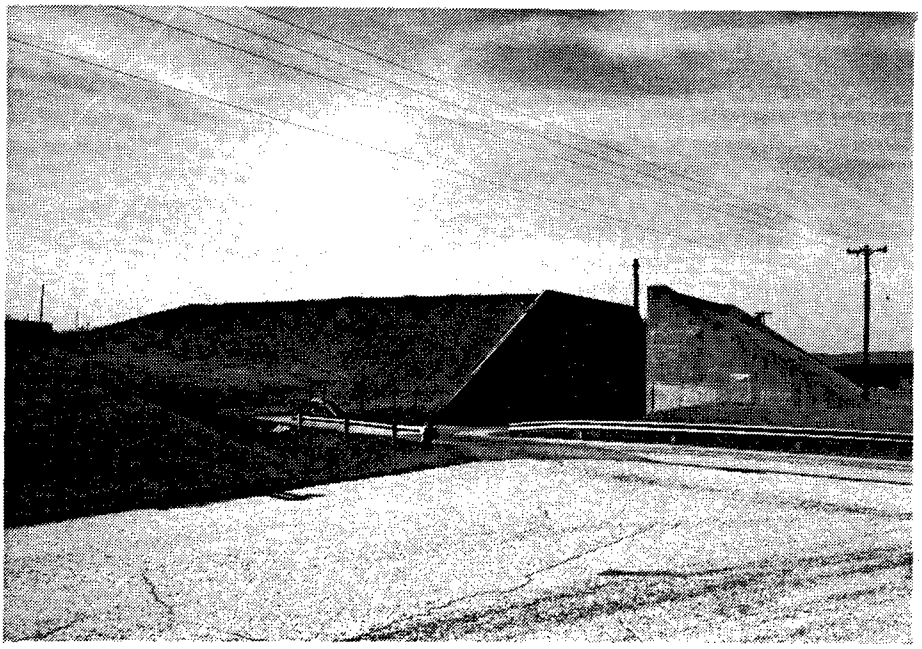

Figure 183. Building 1918: Igloo, or a subterranean magazine, with an earth-backed cement barricade situated in front of the igloo's entrance.

Figure 184. Building 4603-32: Richmond Magazine.

Figure 185. Building 225: Smokeless Powder Magazine.

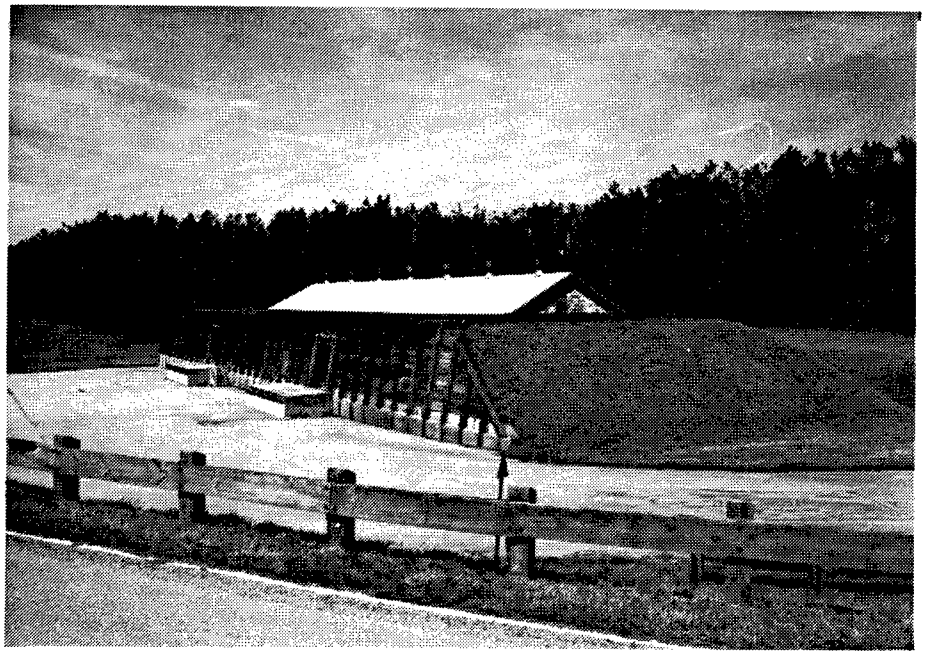

Figure 186. Building 1958: Smokeless Powder Magazine with earth-filled wooden barricade and three earthen-backed wooden barricades.

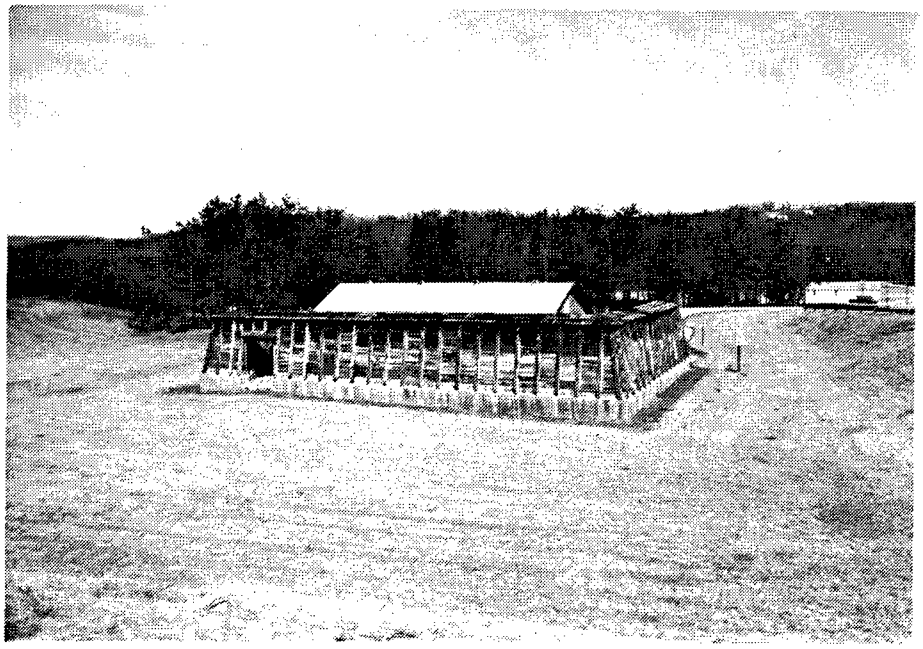

Figure 187. Building 4601-3: Smokeless Powder Magazine that is constructed of sand-filled ceramic tiles.

Figure 188. Building 2244: Ballistic Primer Magazine.

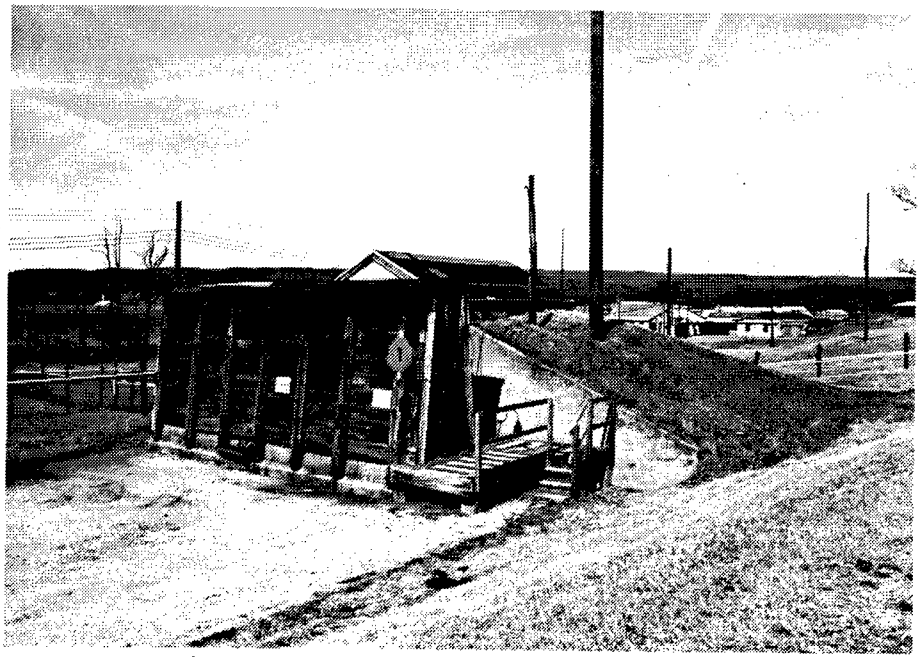

Figure 189. Building 7503: Magazine with an earthen barrier and earth-filled wooden barricade.

Figure 190. Building 226: Tire Storage Shed with aluminum siding.

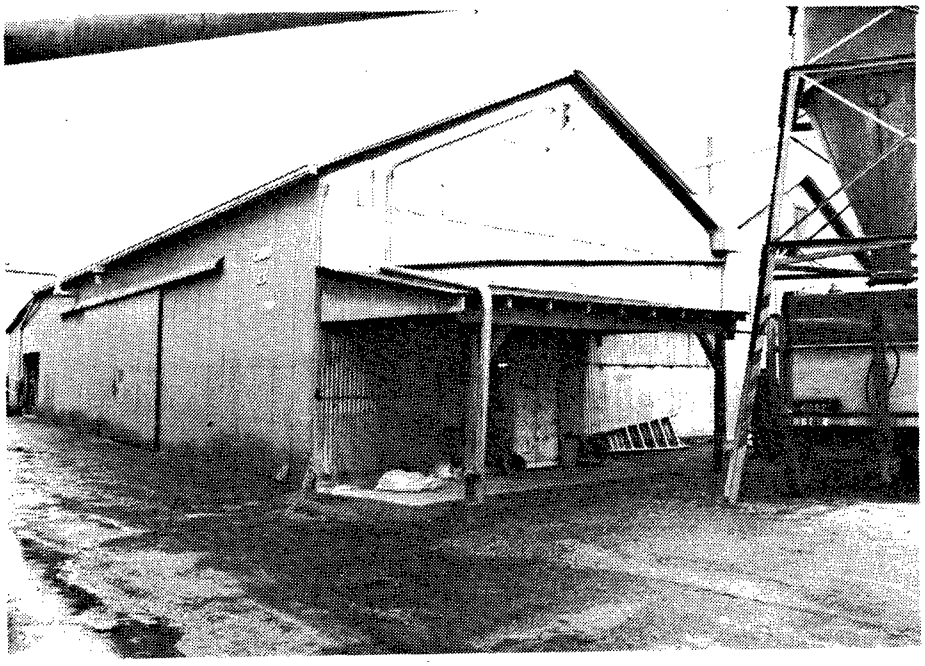

Figure 191. Building 505: Lumber and Pipe Shed with aluminum siding.

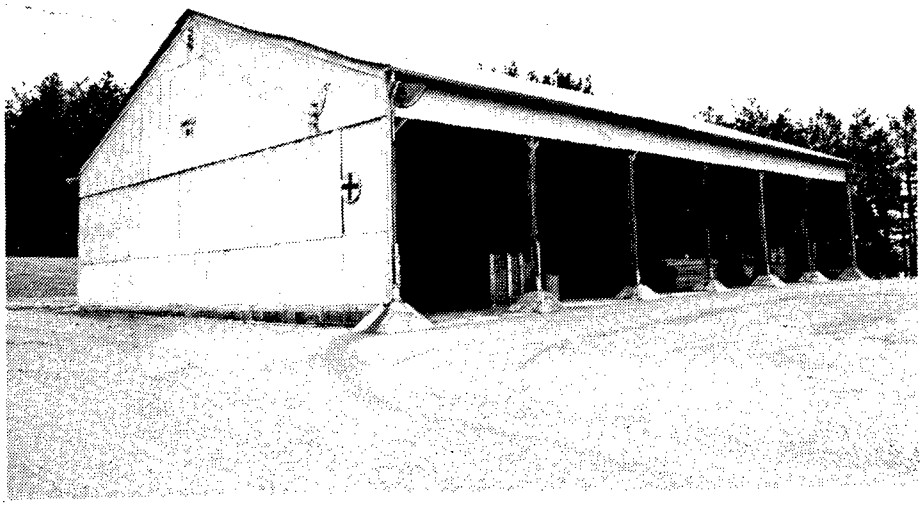

Figure 192. Building 600: Equipment Shed currently storing modern equipment.

SUPPORT FACILITIES FOR EMPLOYEES

Figure 193. Building 200: Entitled "General Instruction Building," the building has four wings to serve different functions, e.g., General Purpose Administration, General Purpose Warehouse, and Change House.

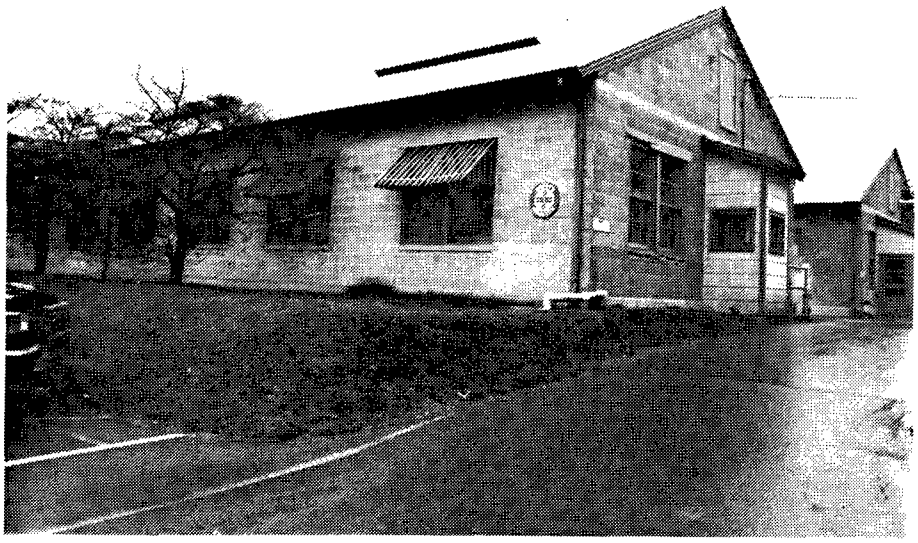

Figure 194. Building 200: This is wing #1 of Building 200 and the remainder of the wings have the same design and dimensions.

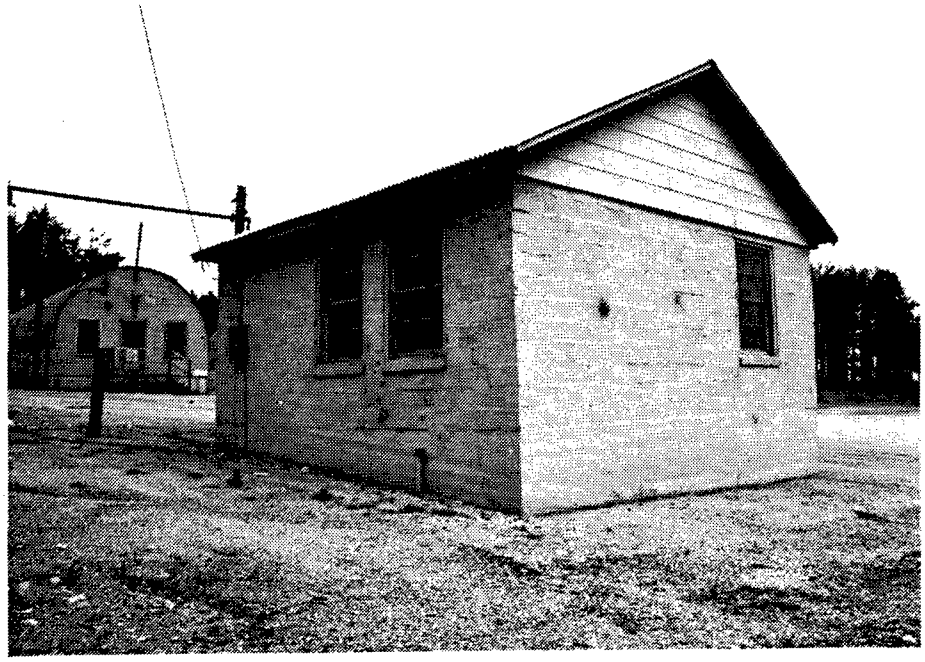

Figure 195. Building 222: Change House.

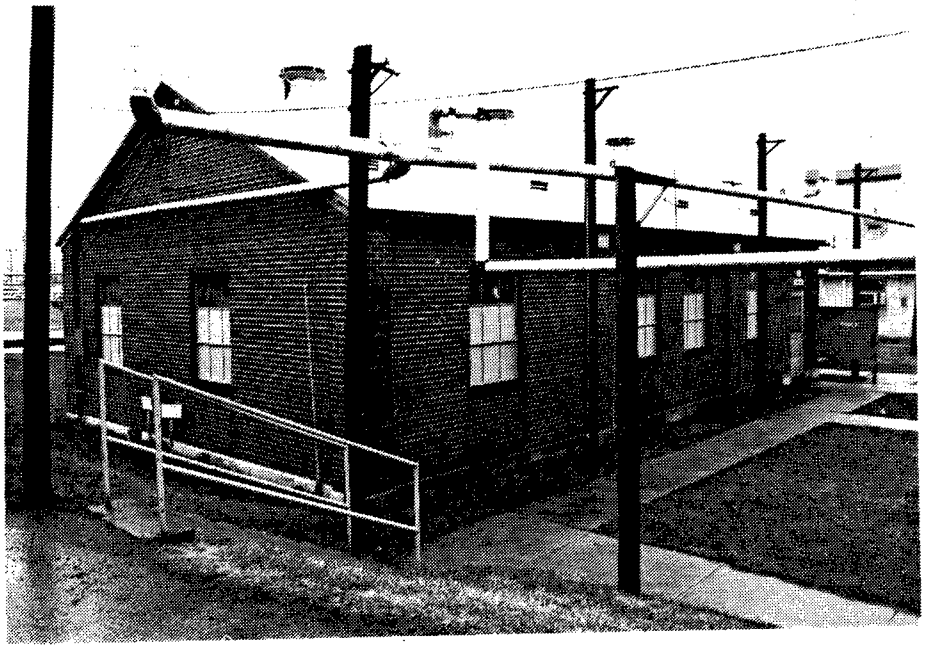

Figure 196. Building 227: Brick Change House.

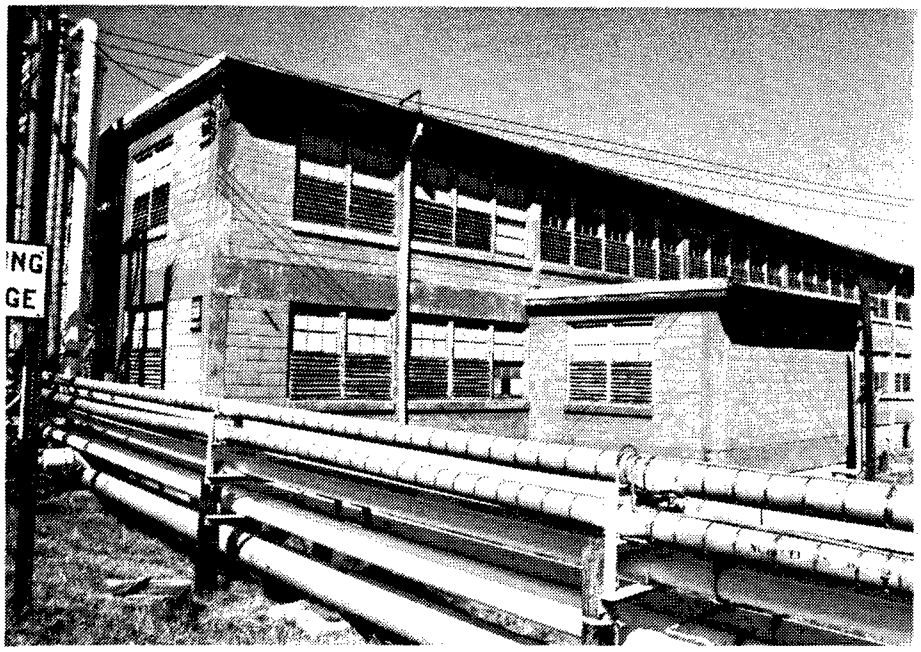

Figure 197. Building 1515: Two-story cinder block Change House.

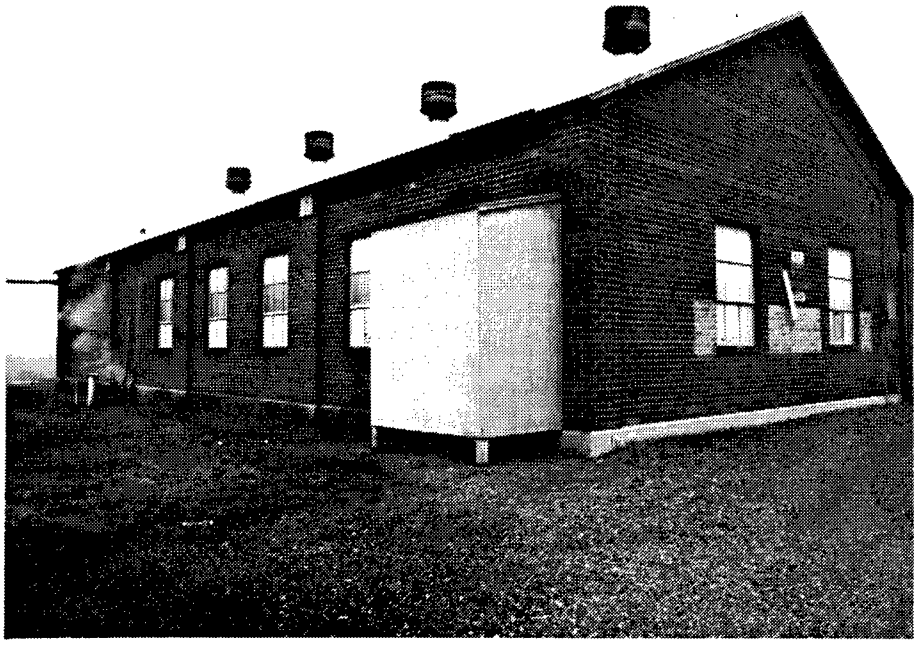

Figure 198. Building 3718: Change House.

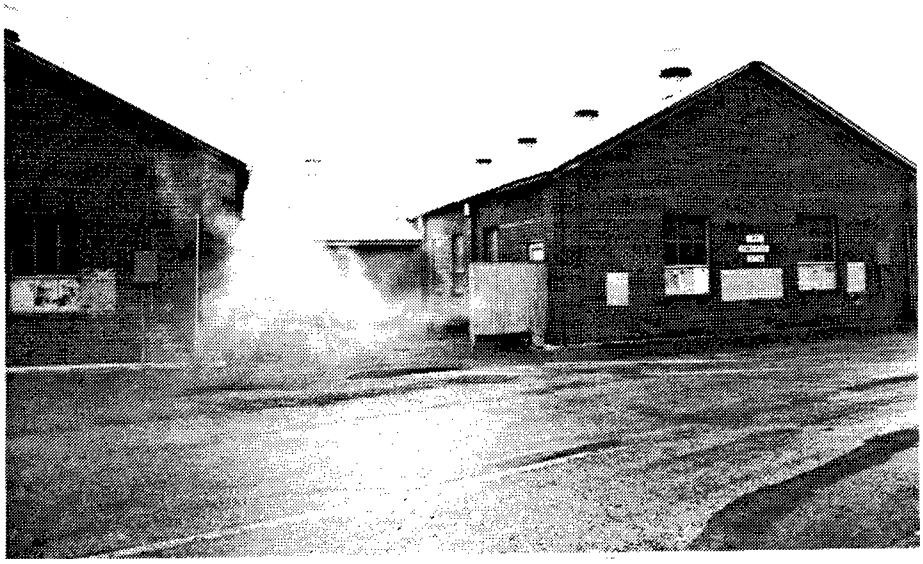

Figure 199. Building 3717 and Building 3716: These two Change Houses are connected.

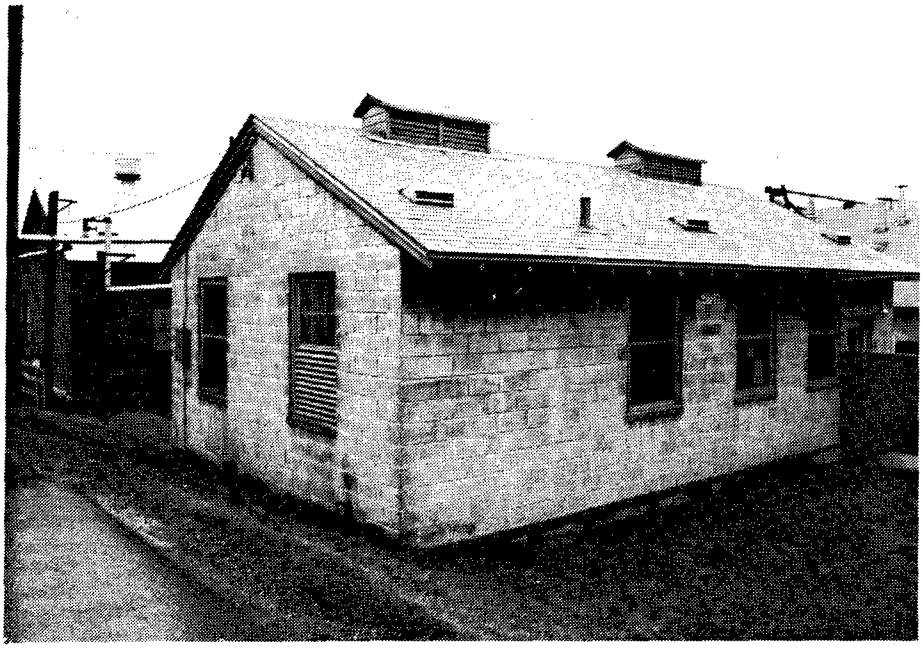

Figure 200. Building 4728: Cinder Block Change House.

Figure 201. Building 7808: Change House for males.

Figure 202. Building 7809: Change House for females.

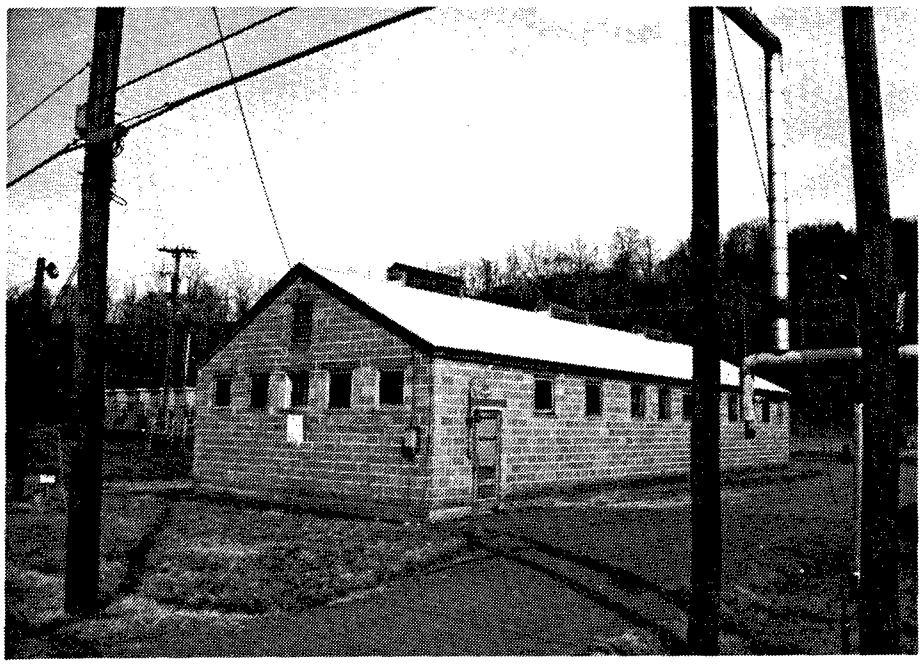

Figure 203. Building 9361-03: Cinder block Change House.

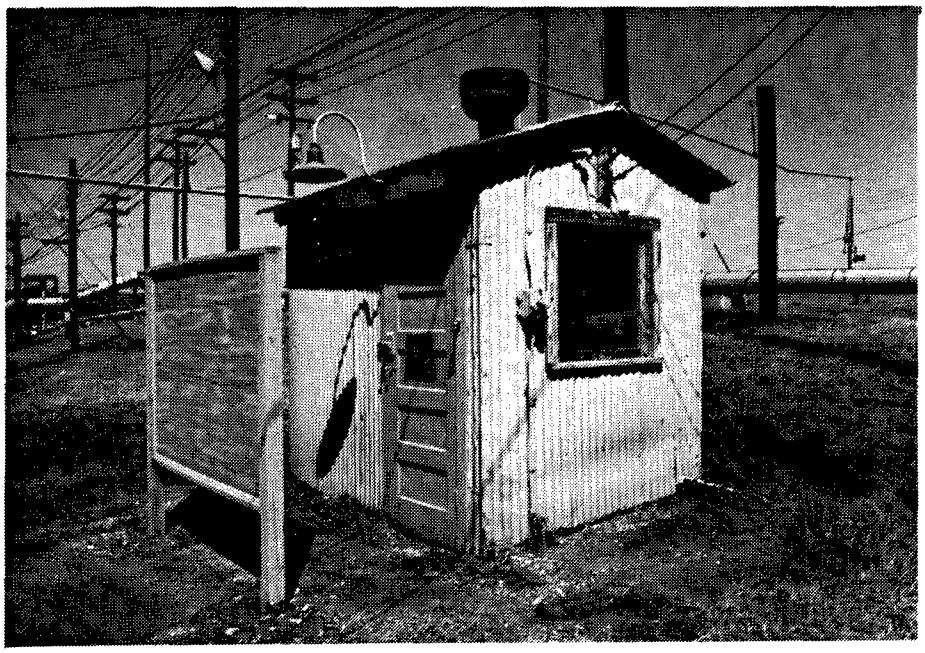

Figure 204. Building 4339: Latrine that consists of two stalls, flush toilets, sink, and mirror.

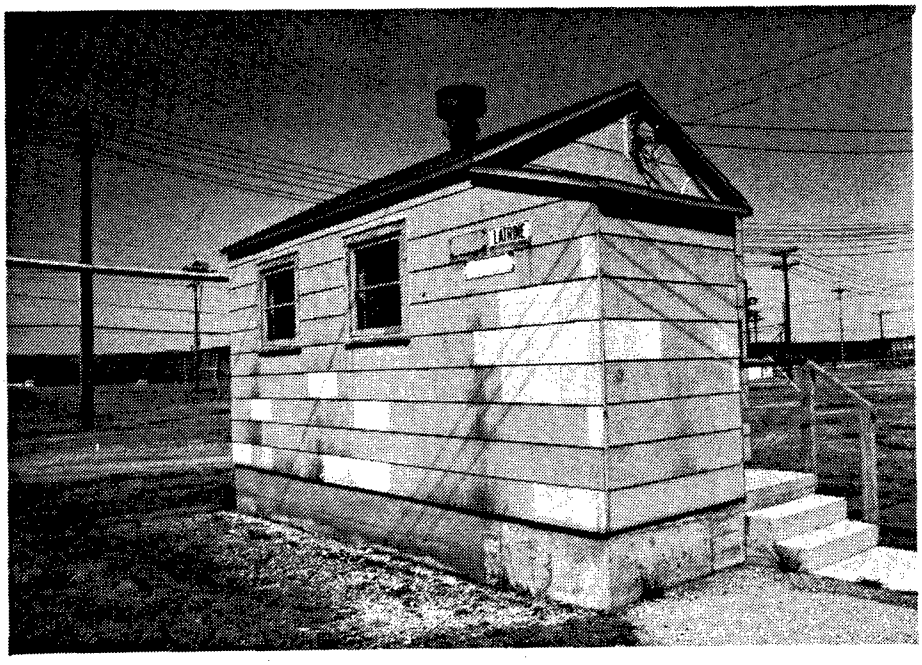

Figure 205. Building 4710-D1: Latrine with a shingled roof.

Figure 206. Building 216: Fitness Center or Gym.

Figure 207. Building 216: West side of the gym.

Figure 208. Building 234: Cafeteria.

UTILITIES AND INFRASTRUCTURES

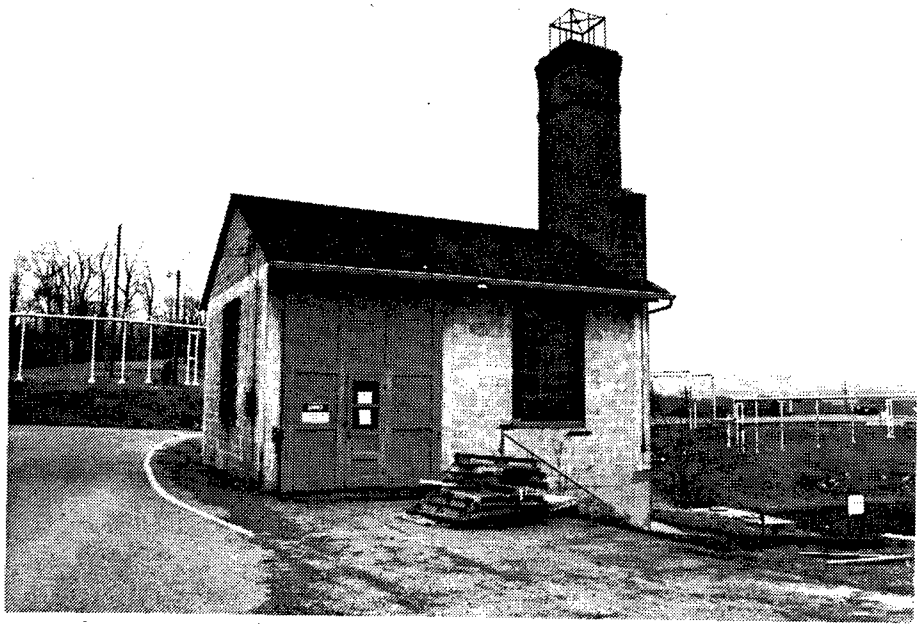

Figure 209. Building 197: Incinerator Building.

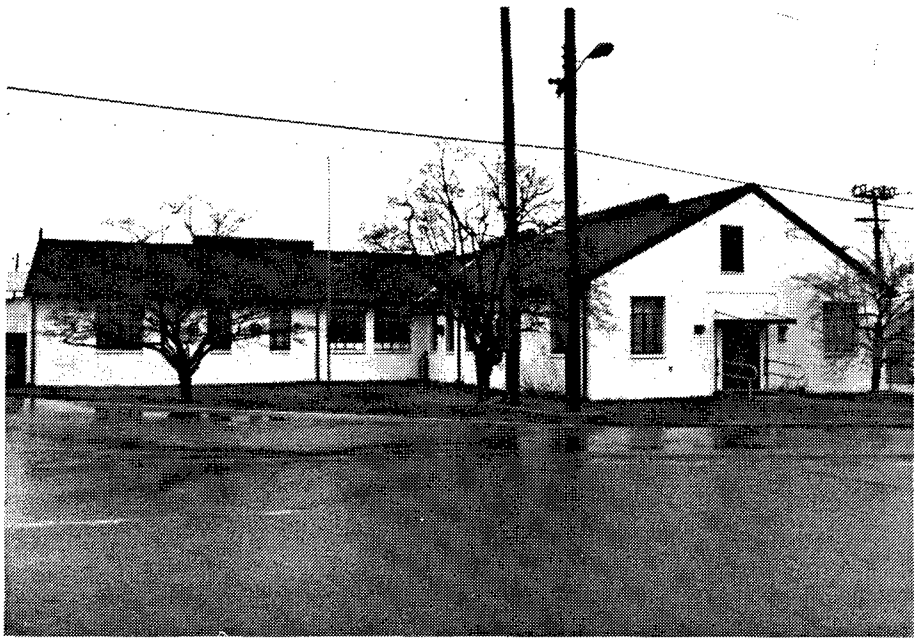

Figure 210. Building 205: Hospital/Clinic with beds.

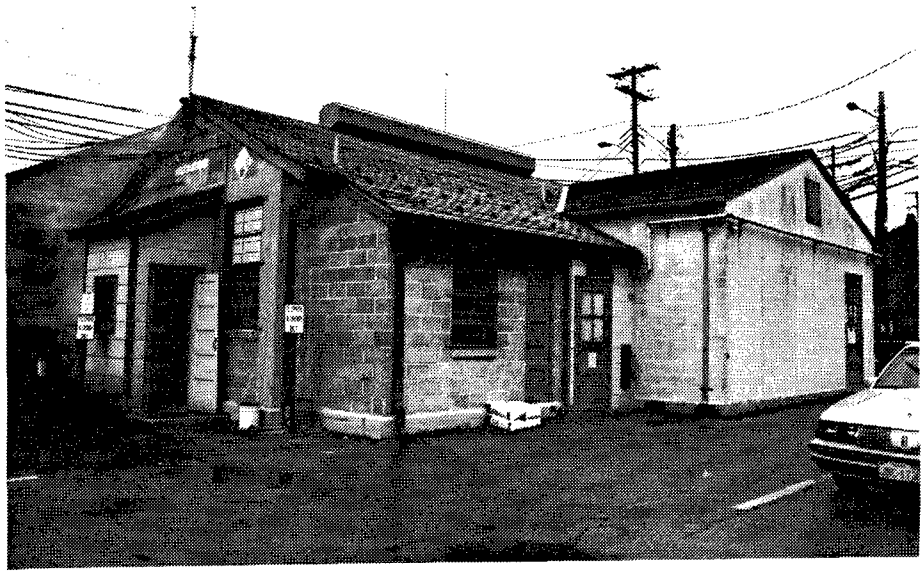

Figure 211. Building 263: Telephone Building.

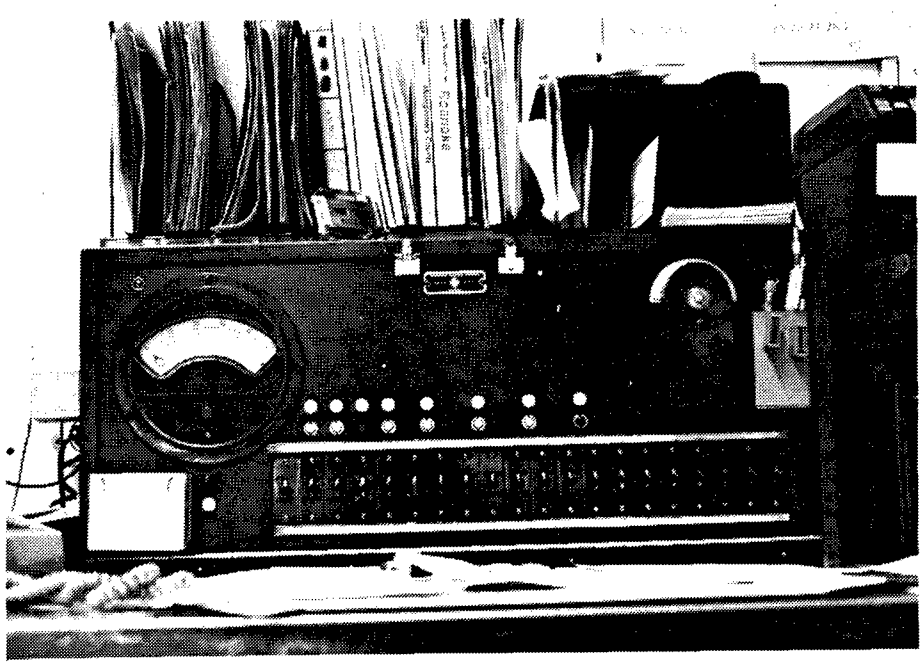

Figure 212. Building 263: Interior view of the Central Office showing a switchboard manufactured by Automatic Electric, Chicago, Illinois.

Figure 213. Building 223: Sentry Station/Plant Gate House #3.

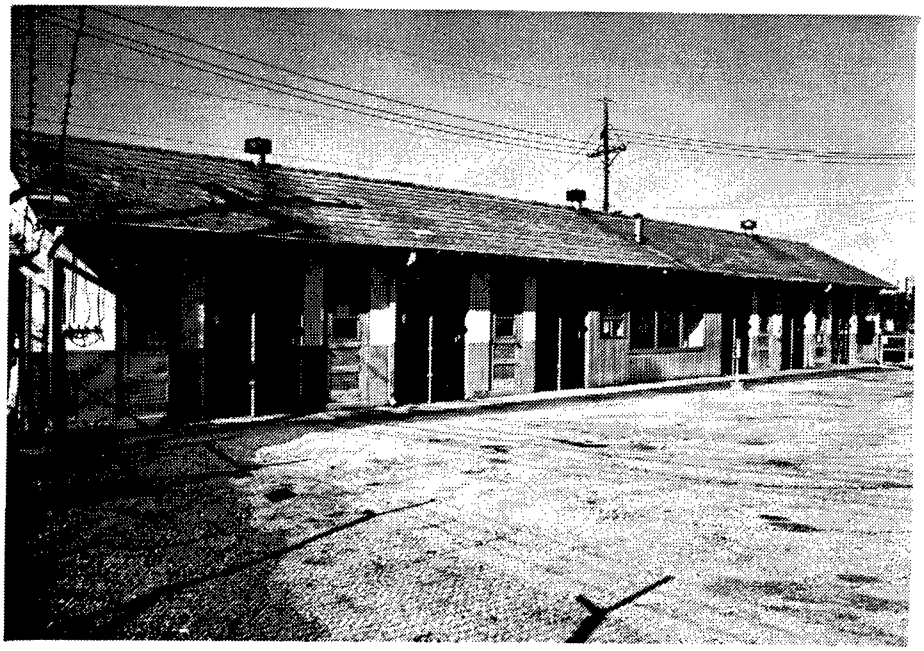

Figure 214. Building 2042: Sentry Station/Plant Gate House #2.

Figure 215. Building 221-5: Sentry House.

Figure 216. Building 235: Police Station.

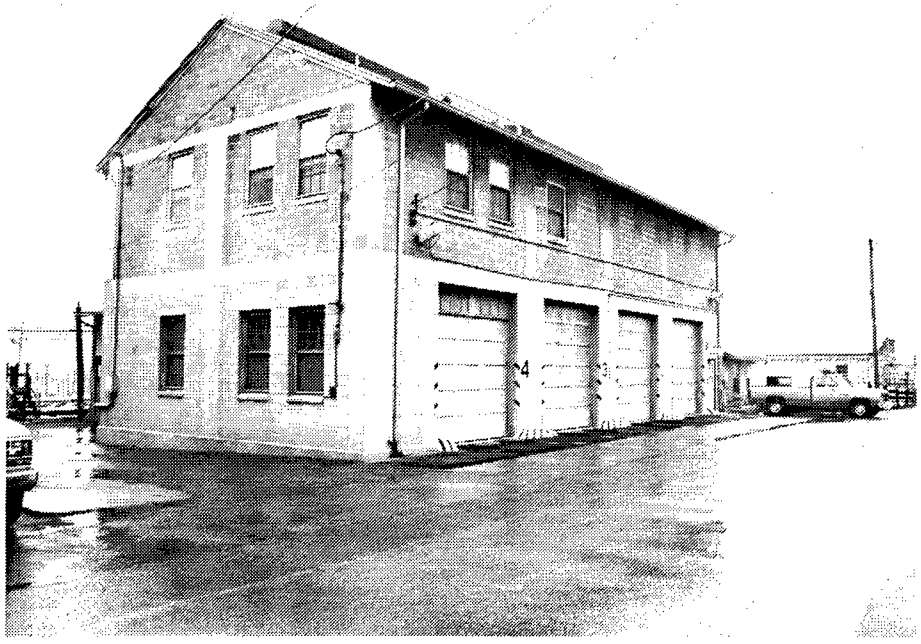

Figure 217. Building 222: Two-story Fire Station containing bays 1 through 4.

Figure 218. Building 4705-2: Fire Station containing bays 5 and 6 (Fire Station Building 222 is visible in the background).

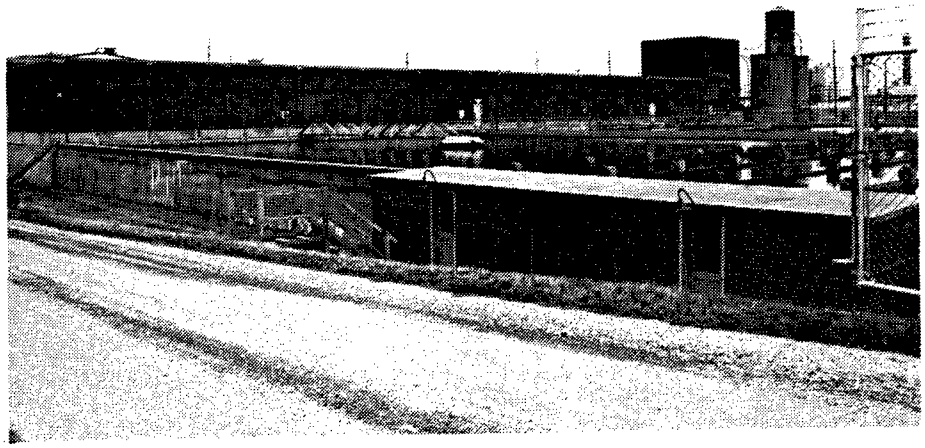

Figure 219. Building 407: Water Filtration Plant where sediment in the water is removed.

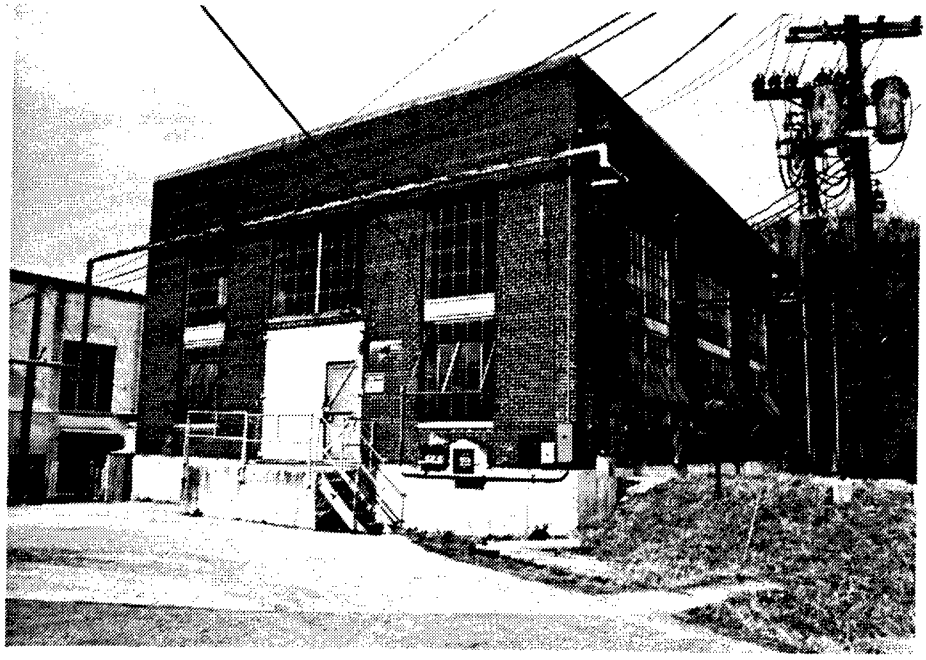

Figure 220. Building 408: River Pump House.

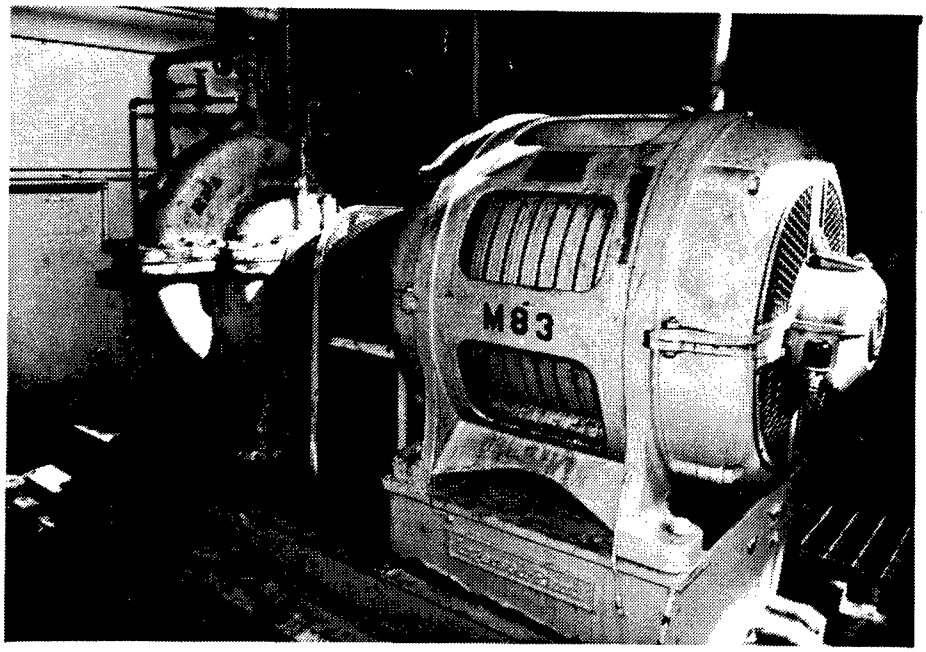

Figure 221. Building 408: An Ingersoll-Rand water pump with a Westinghouse induction motor.

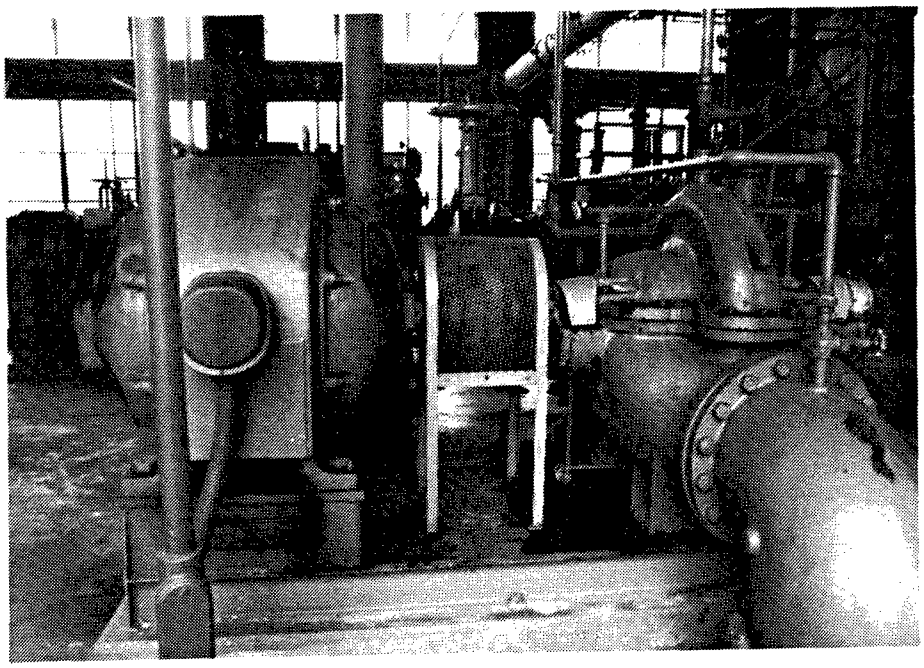

Figure 222. Building 409: Ingersoll-Rand water pump found in the Water Filtration Plant.

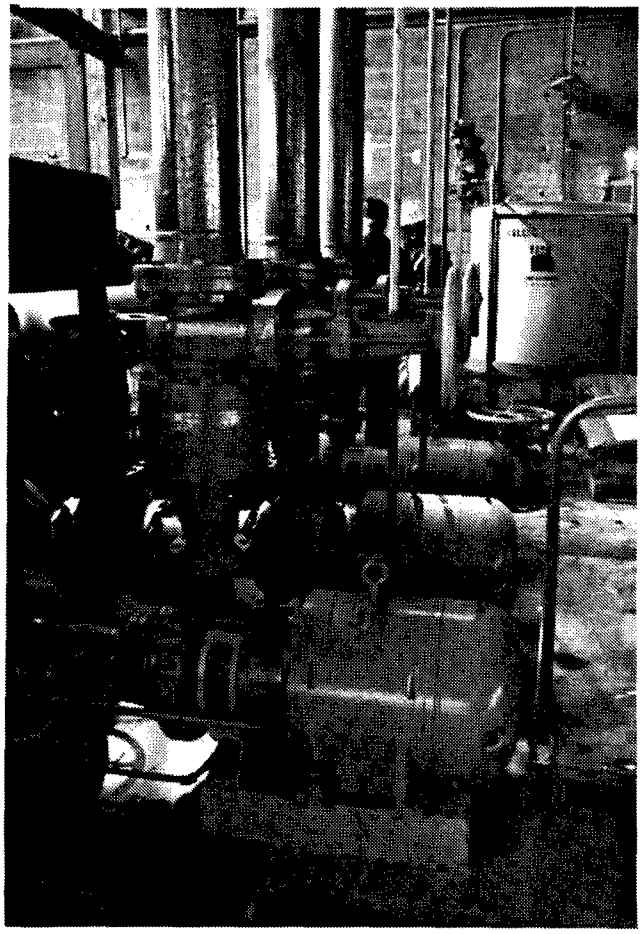

Figure 223. Building 409: Pumps in the River Pump House.

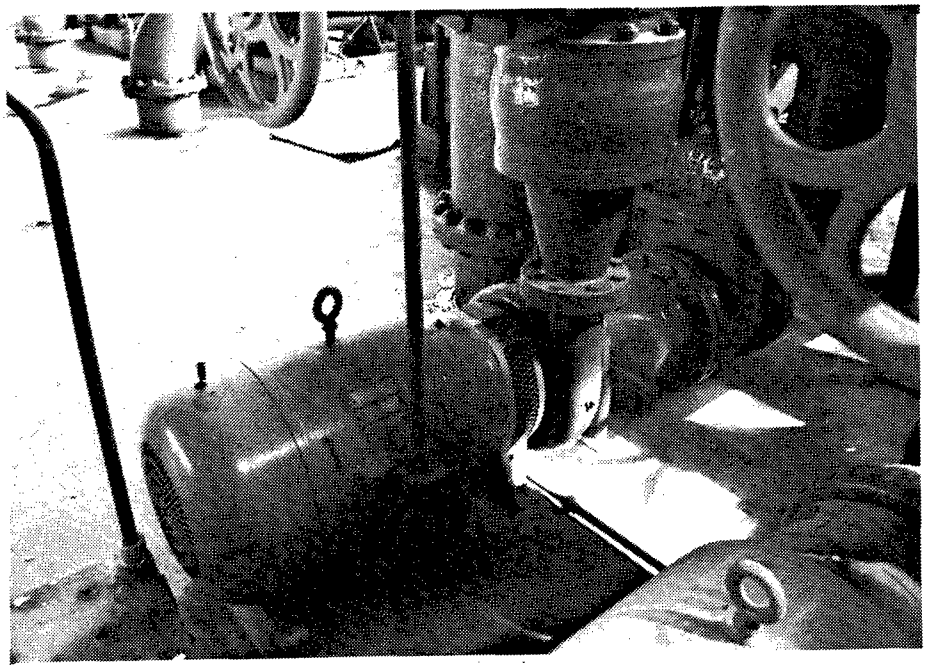

Figure 224. Building 409: Pumps at the Water Filtration Plant.

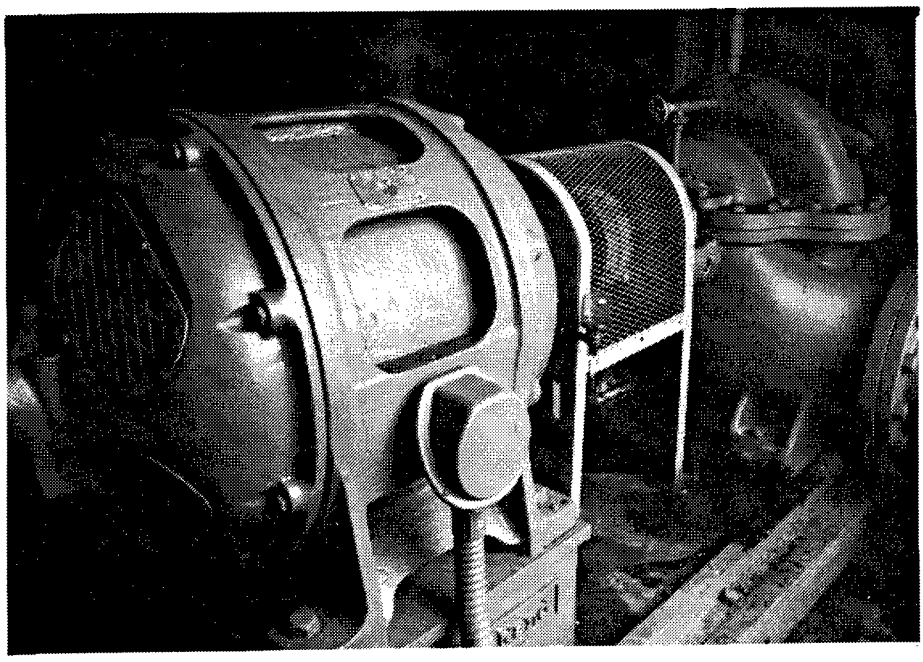

Figure 225. Building 409: Back washing filters by Ingersoll-Rand Company.

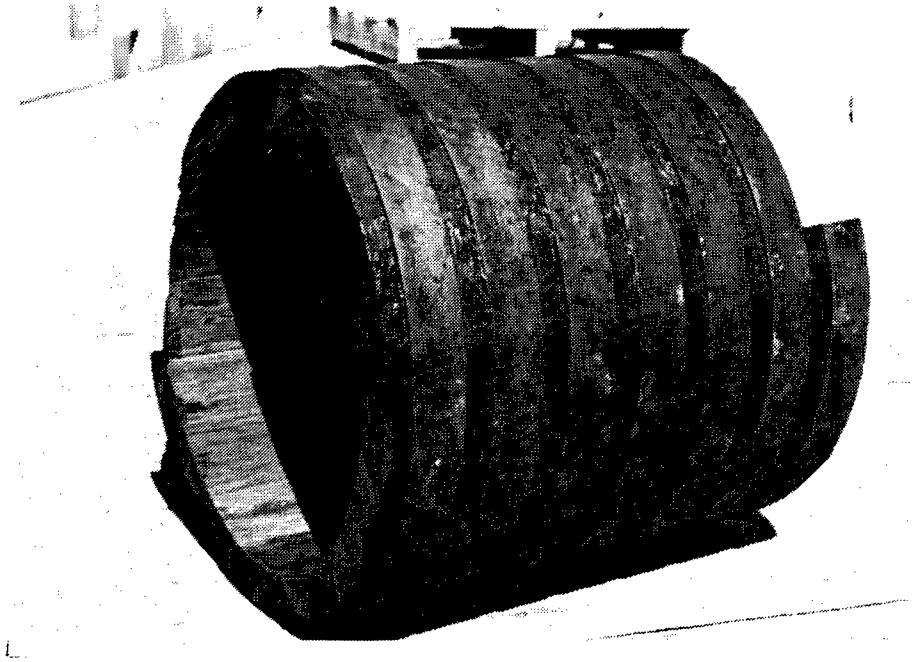

Figure 226. Building 1908: This wooden water pipe section with a 15- to 16-inch diameter was recovered from between buildings 407 and 409 and is believed to have carried water from the New River to the Water Pump House.

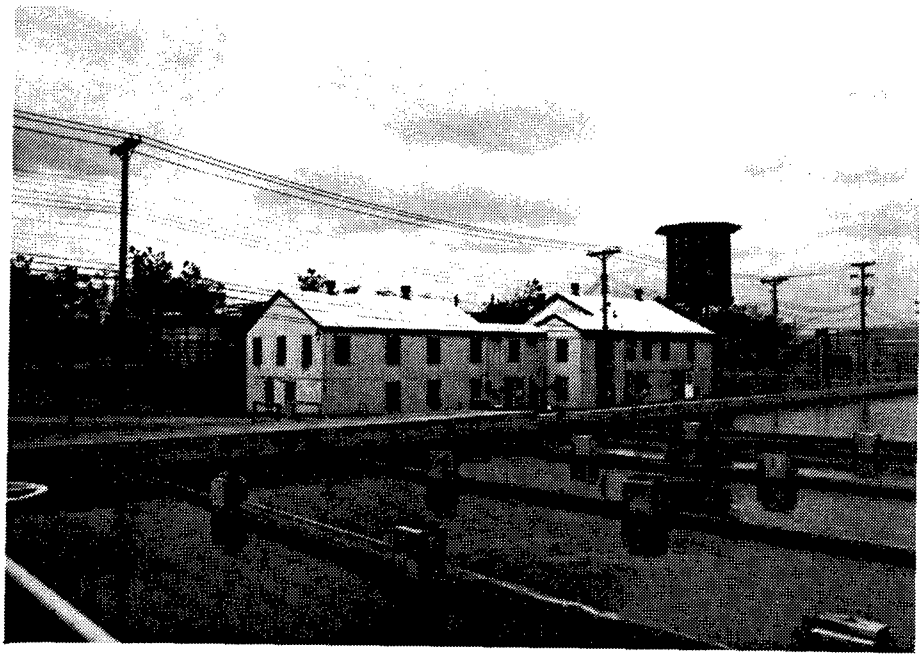

Figure 227. Building 419: Drinking Water Plant with original wooden water tanks.

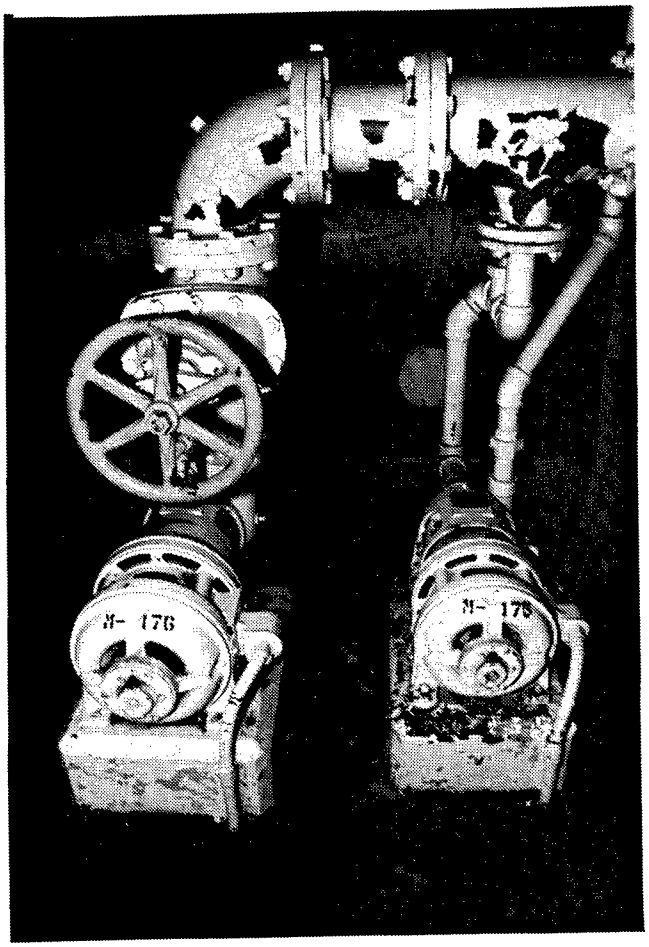

Figure 228. Building 419: Wash water pumps.

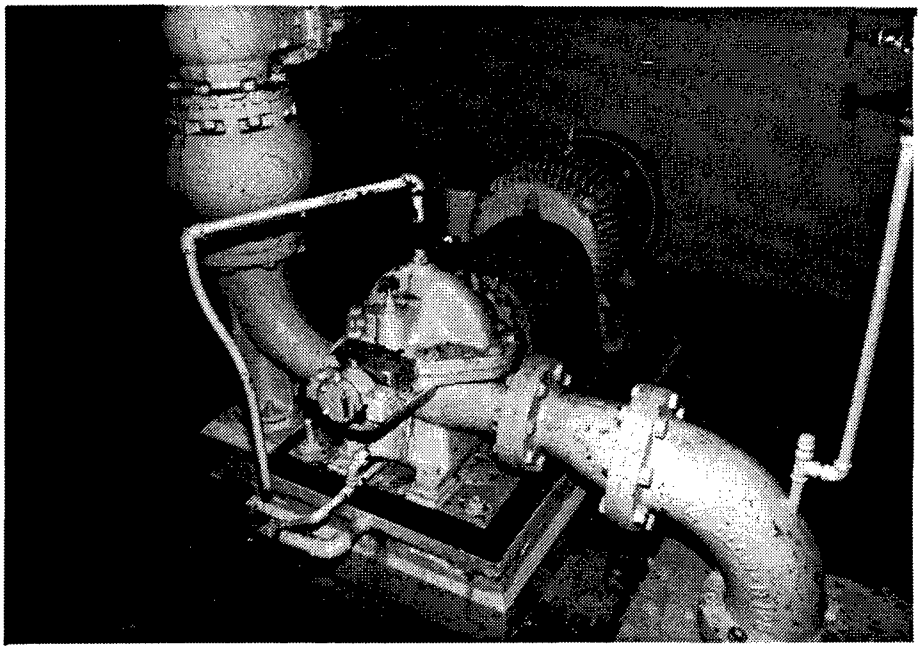

Figure 229. Building 419: Water pump with a relatively modern motor in the background.

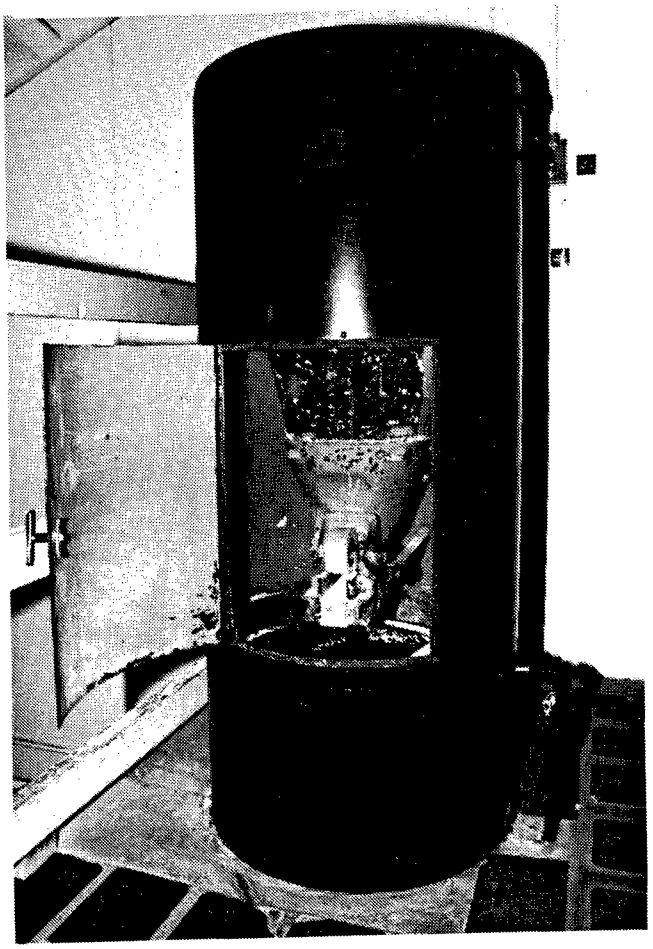

Figure 230. Building 419: Dry chemical feeder for carbon tanks that was manufactured by Wallace and Tiernan Company, Newark, New Jersey.

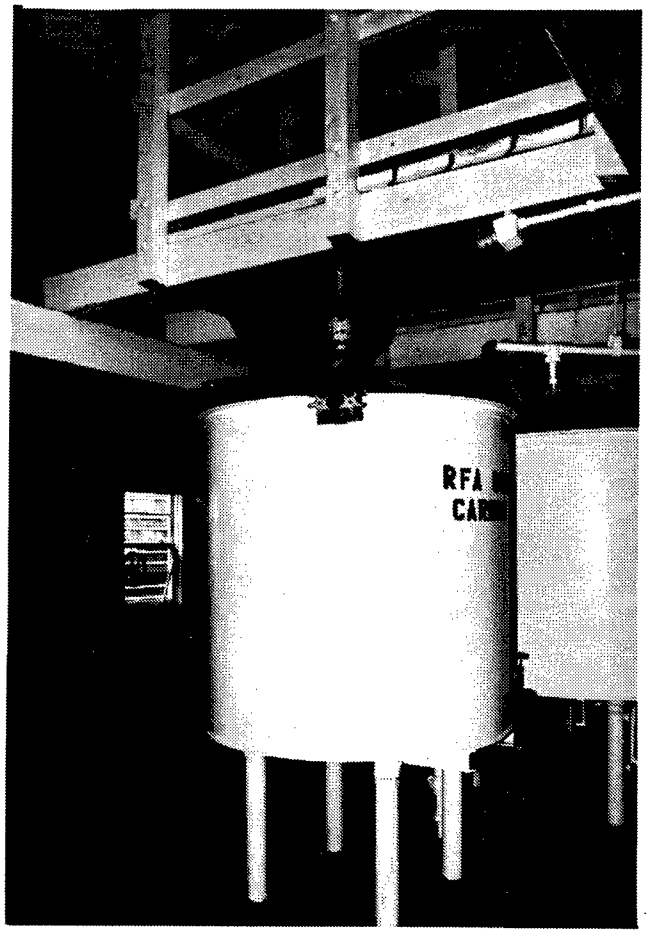

Figure 231. Building 419: Carbon Tank.

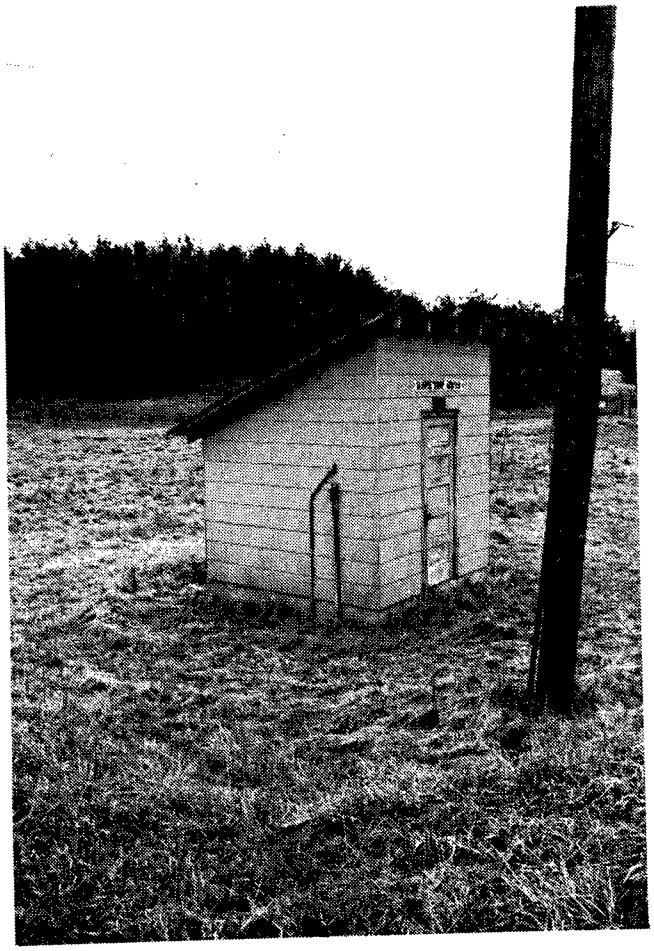

Figure 232. Building 710: Sewage Treatment Building.

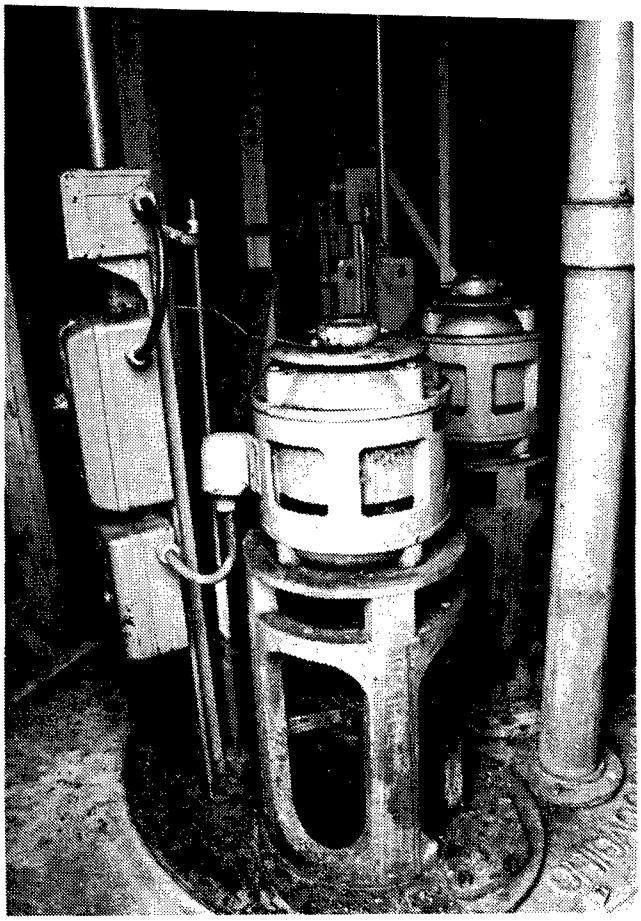

Figure 233. Building 710: Sewage pump manufactured by Chicago Pump Company.

Figure 234. Building 926: Magazine Area's 12-inch well with pump house.

Figure 235. Building 926: Peerless pump.

Figure 236. Building 1521A: Chilled Water Pump House.

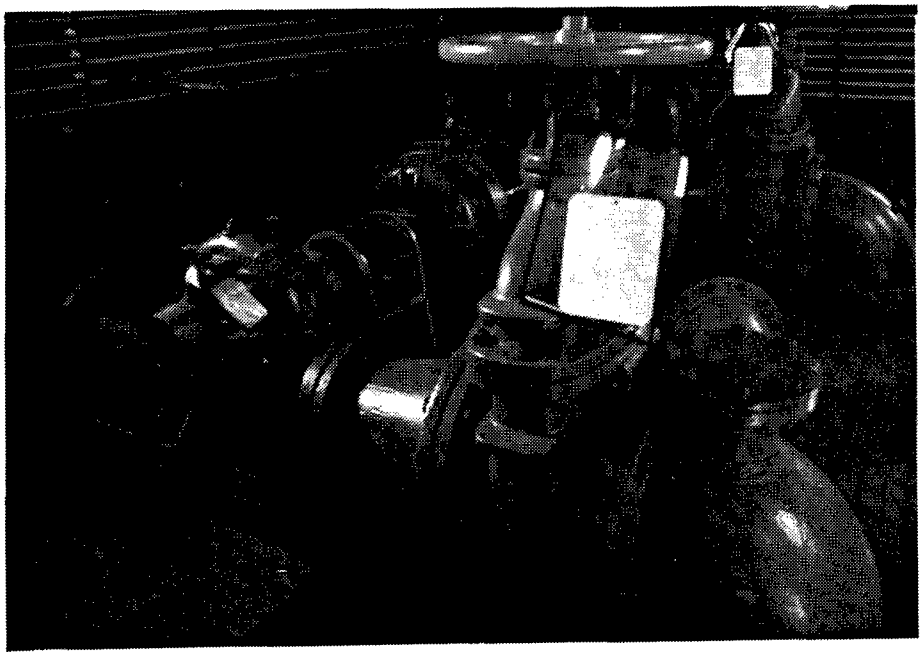

Figure 237. Building 1521A: Ingersoll-Rand chilled water circulating pump and motor.

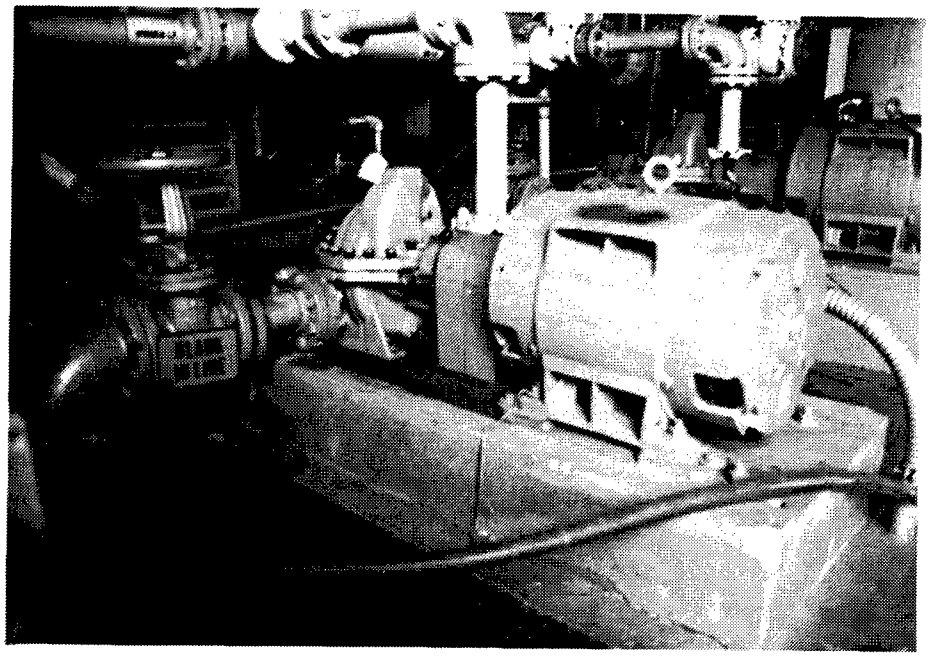

Figure 238. Building 1521: Low pressure centrifugal pump manufactured by Westinghouse and Worthington.

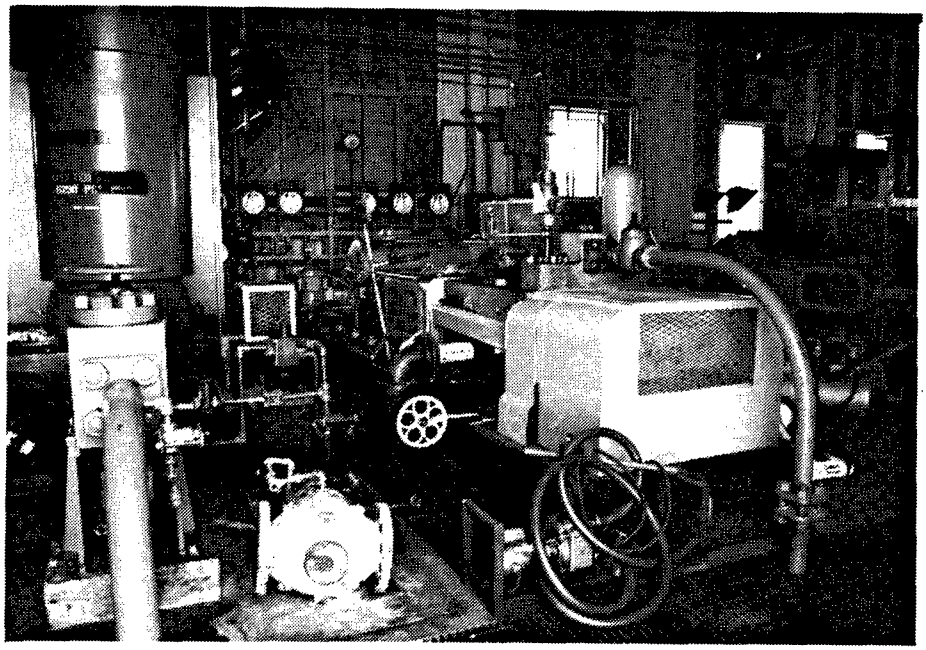

Figure 239. Building 1521: Worthington 120, high pressure piston pump and motor.

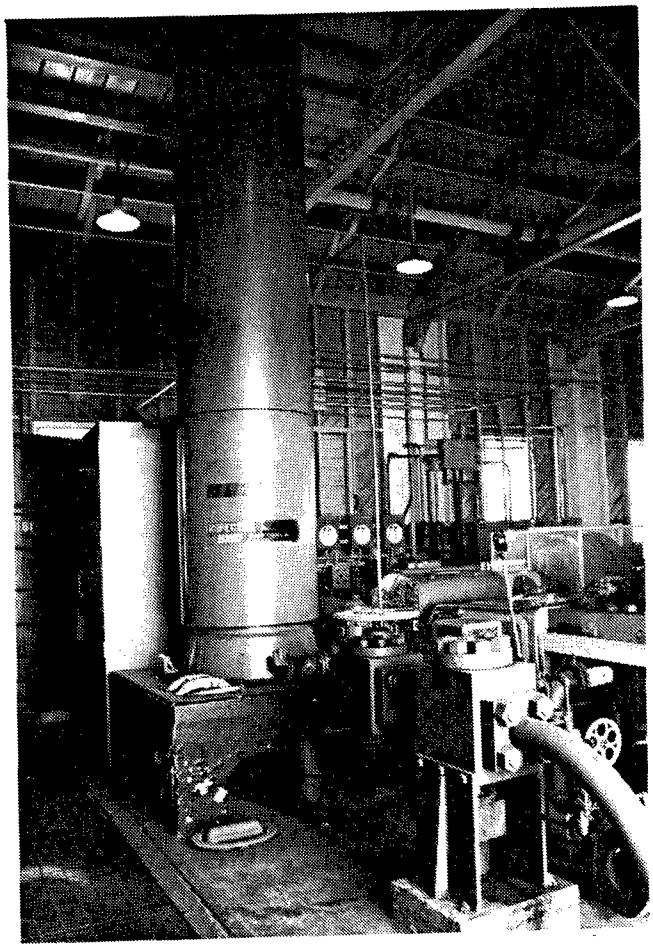

Figure 240. Building 1521: High pressure hydraulic tank (reservoir).

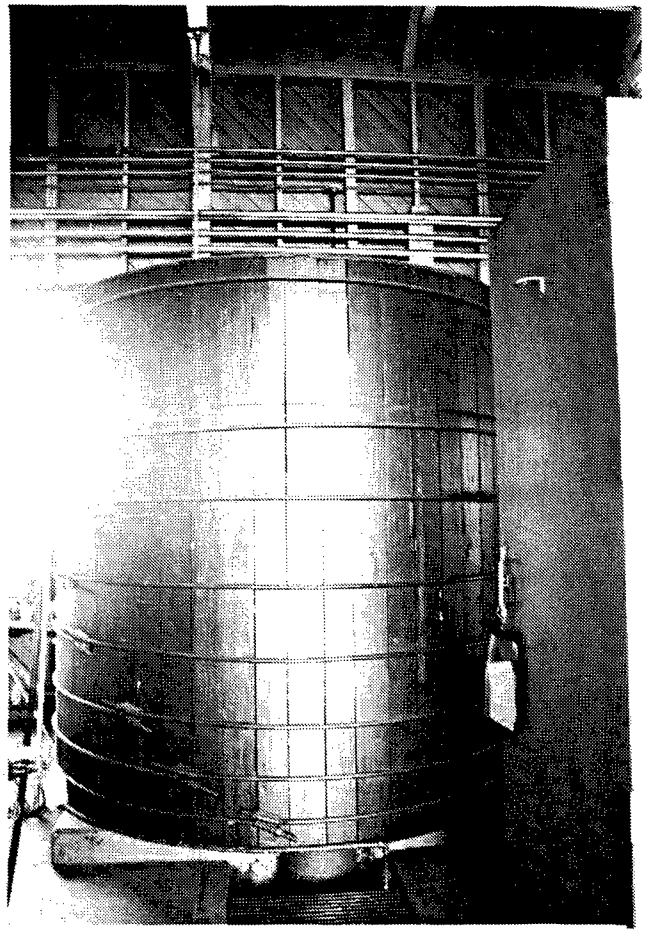

Figure 241. Building 1521: Lead-lined wooden water filter tank where the water level is monitored by floats.

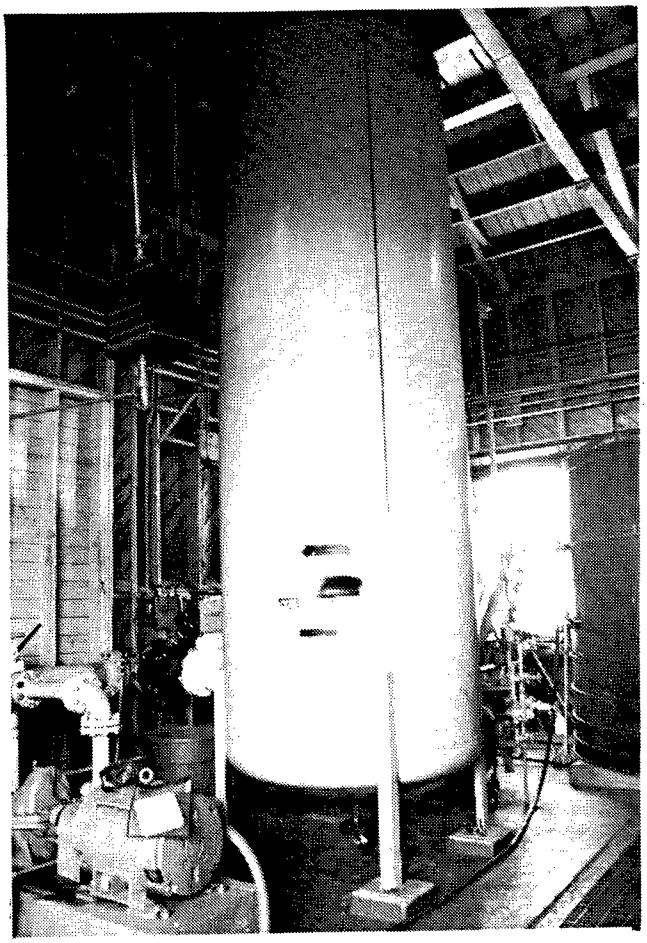

Figure 242. Building 1521: Low pressure hydraulic tank reservoir for hydraulic oil.

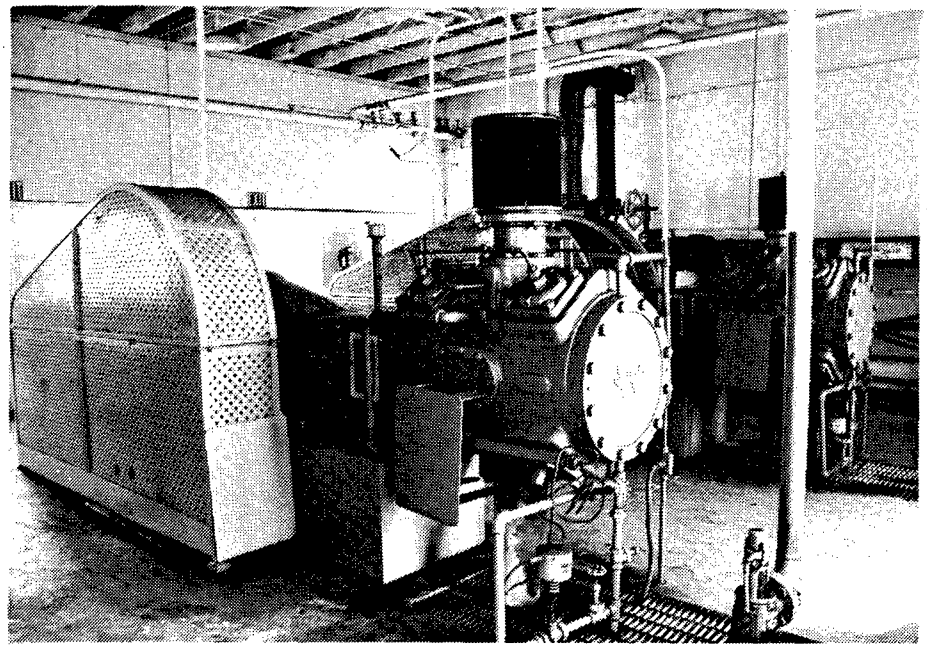

Figure 243. Building 9354: Worthington compressor at this Compressor House.

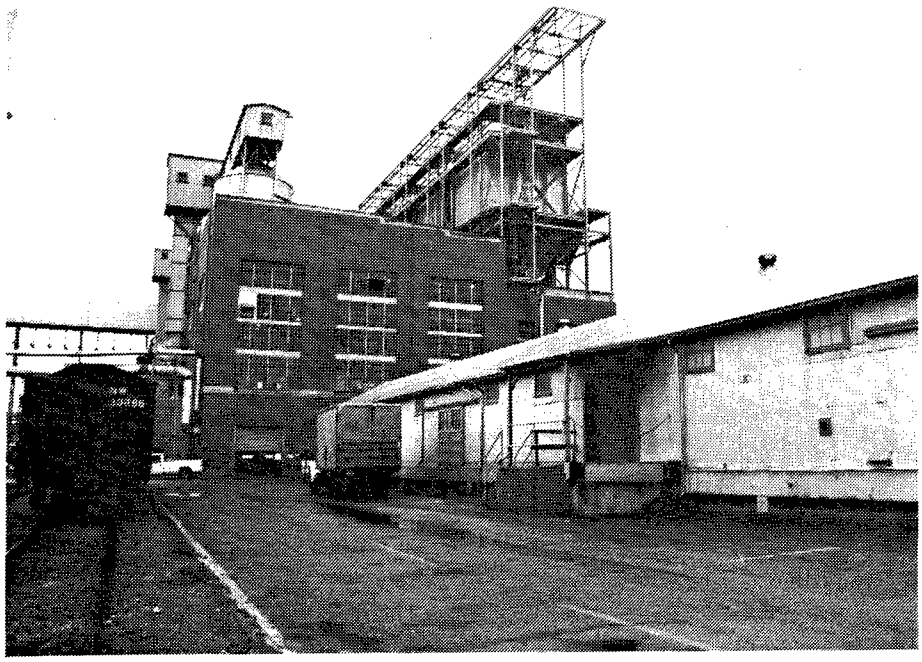

Figure 244. Building 400: Main Power Plant where power is provided by coal, which supplies the entire plant.

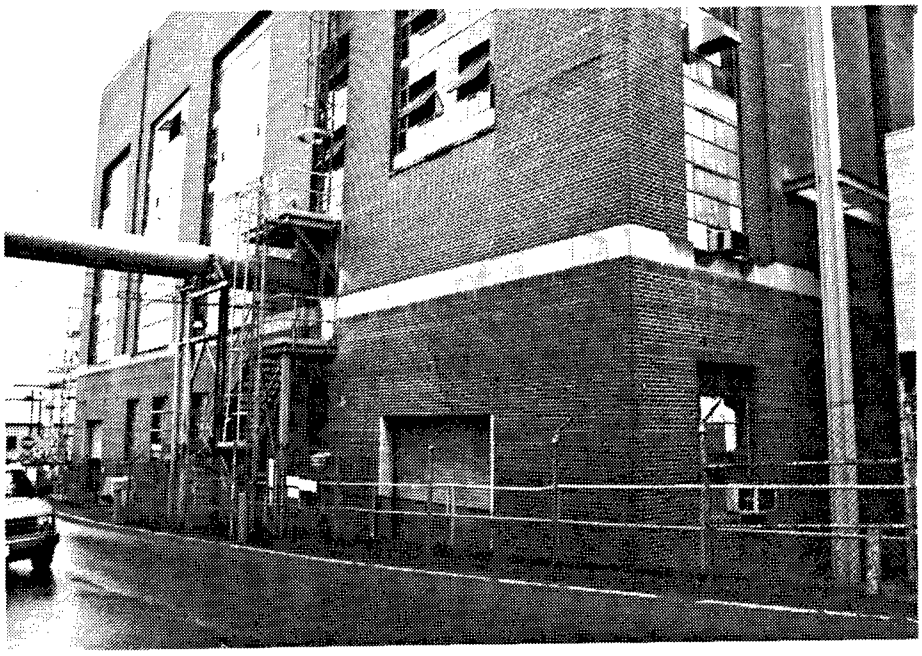

Figure 245. Building 400: Detail of the masonry of the Main Power Plant.

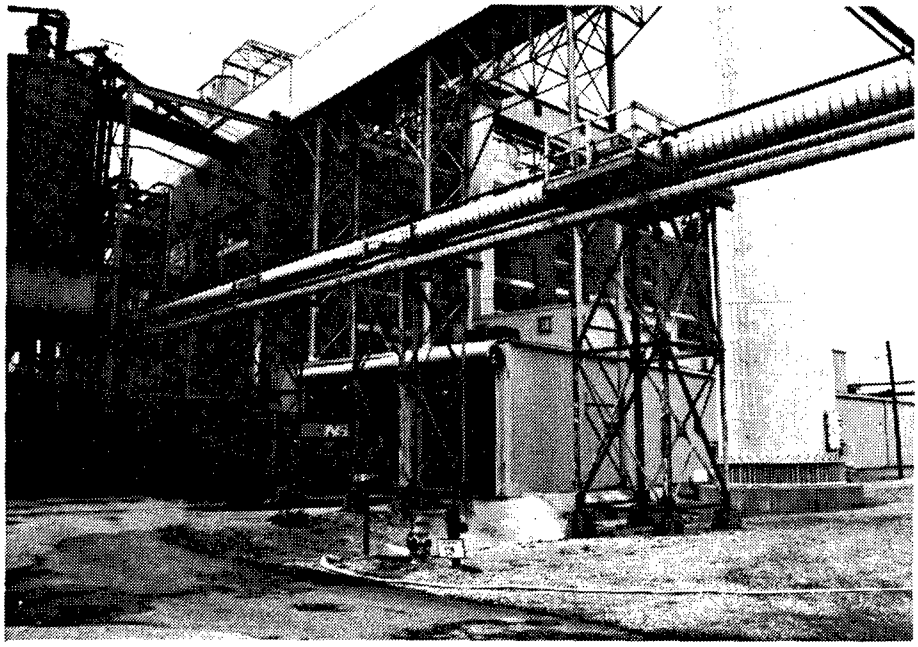

Figure 246. Building 400: The back side of the Main Power Plant is obscured by modern equipment.

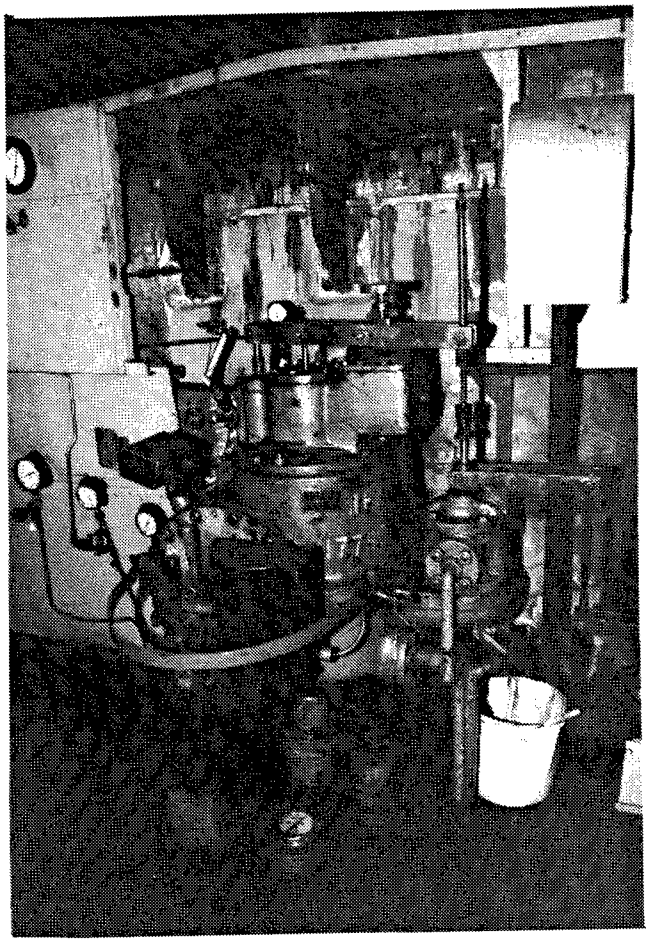

Figure 247. Building 400: Close-up of turbine.

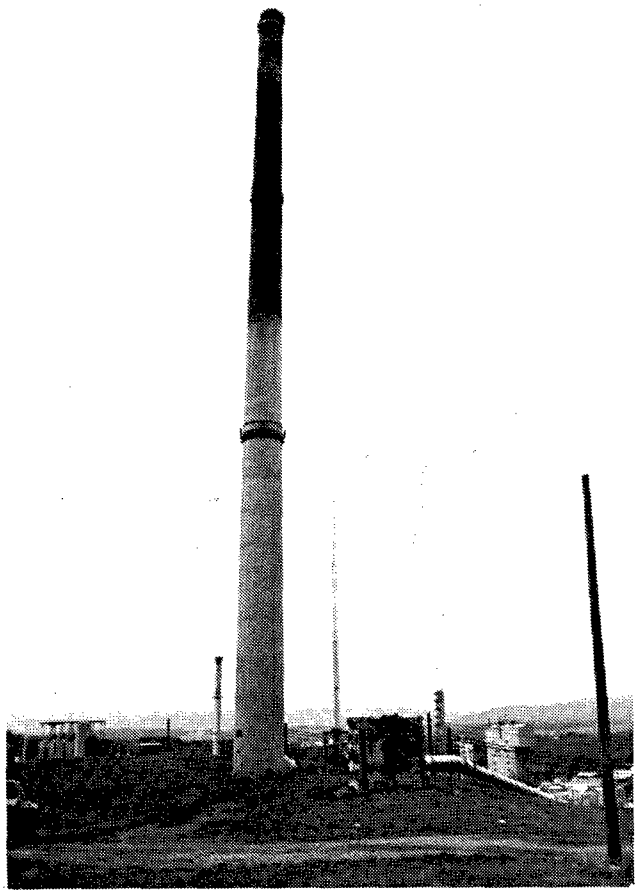

Figure 248. Building 1013: Fume Exhaust and Recovery for the Main Power Plant.

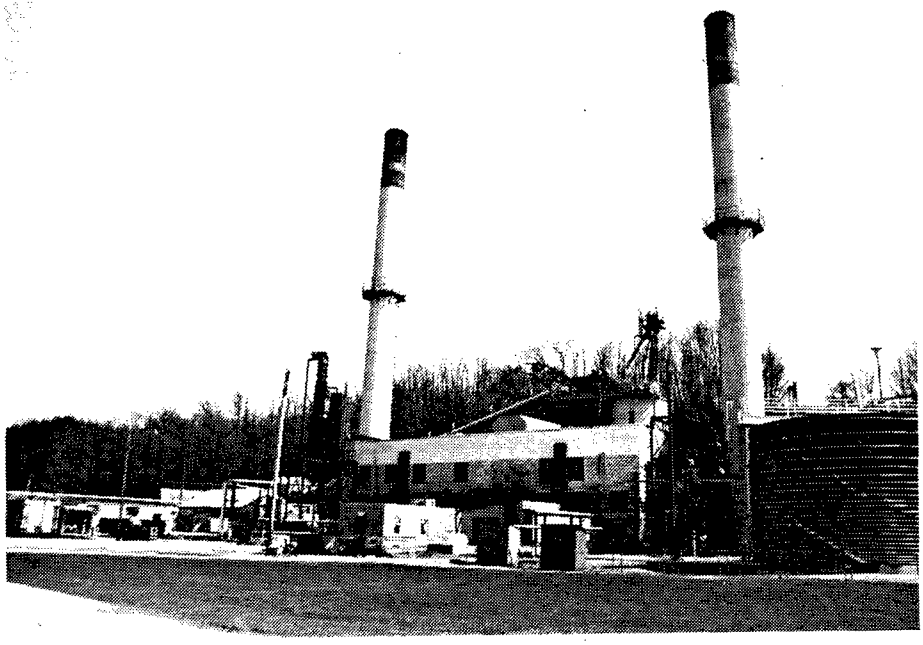

Figure 249. Building 4329: Power House #2.

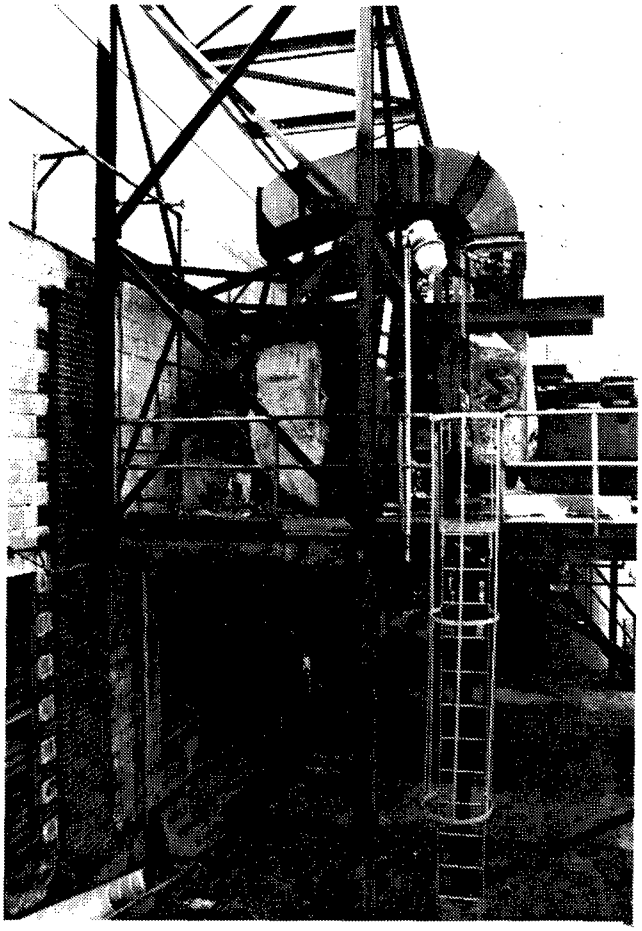

Figure 250. Building 4329: Ash silos where coal ash was collected and stored in these silos while waiting for removal.

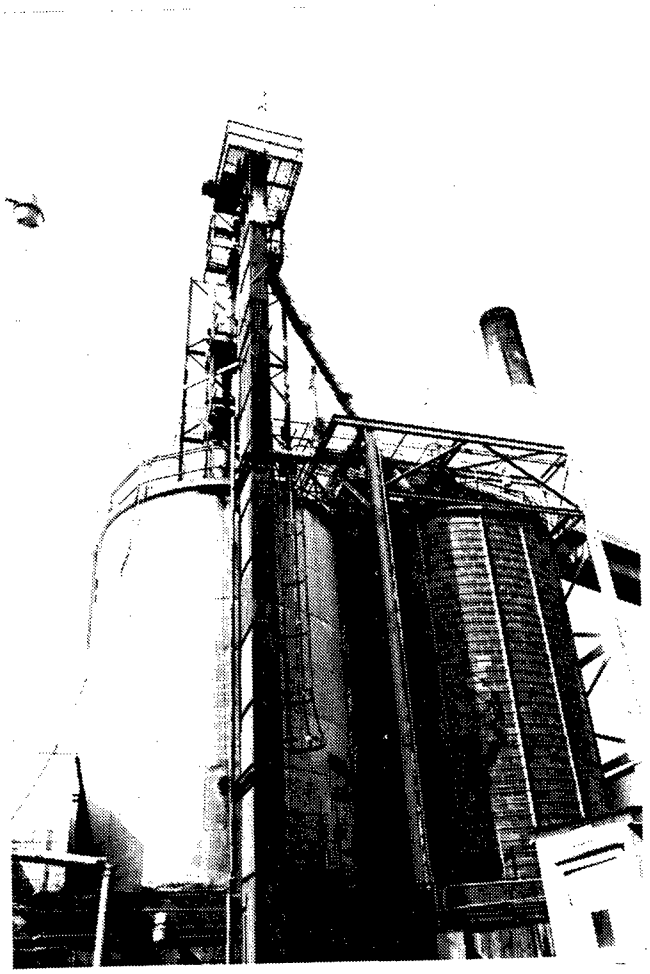

Figure 251. Building 4329: A ceramic coal silo (on the right), a steel coal silo (on the left), and a coal elevator.

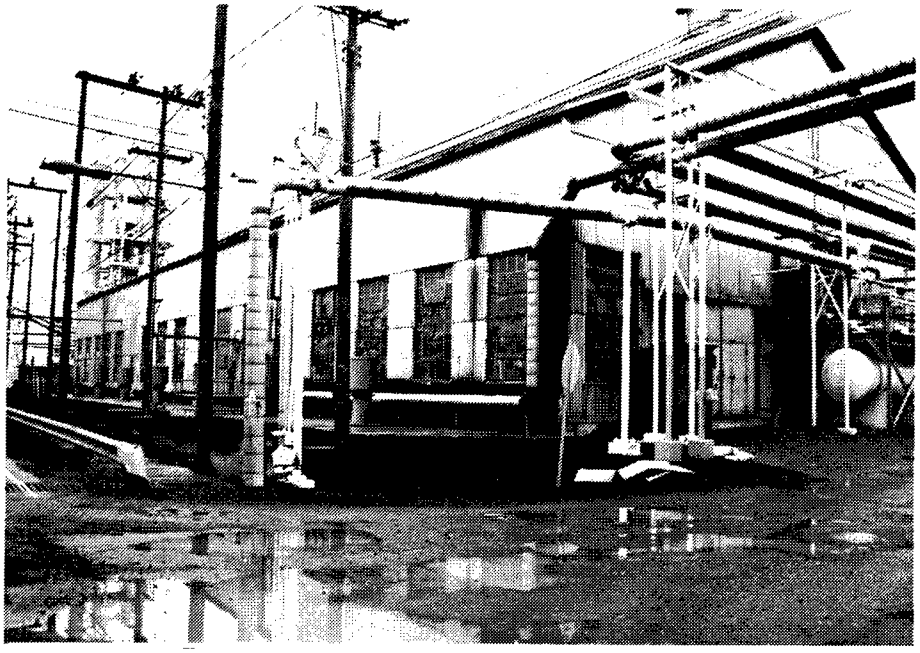

Figure 252. Building 700: Air Compressor House.

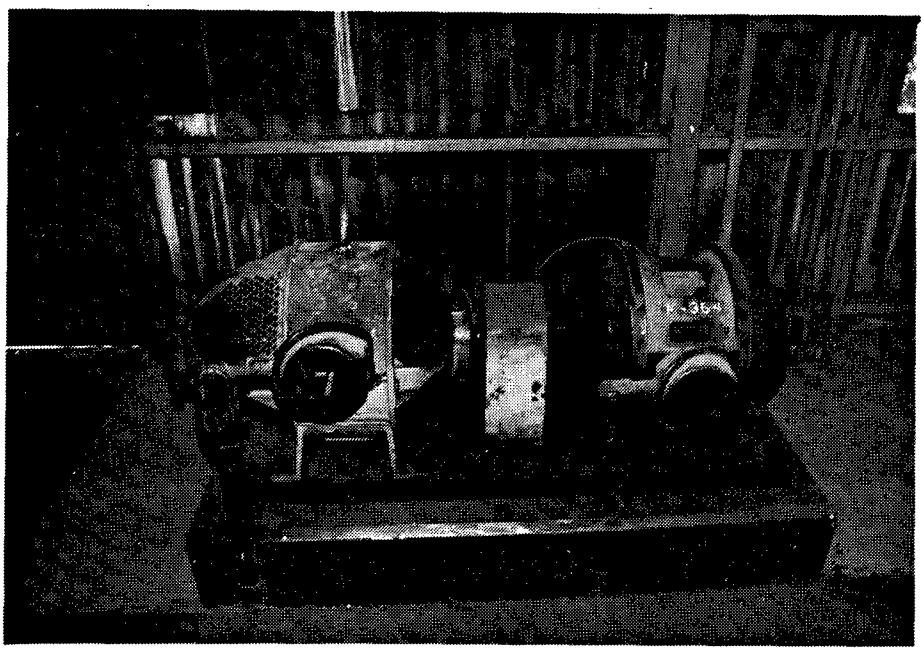

Figure 253. Building 700: Exciter motor that converts DC to AC for the air compressor's control panel.

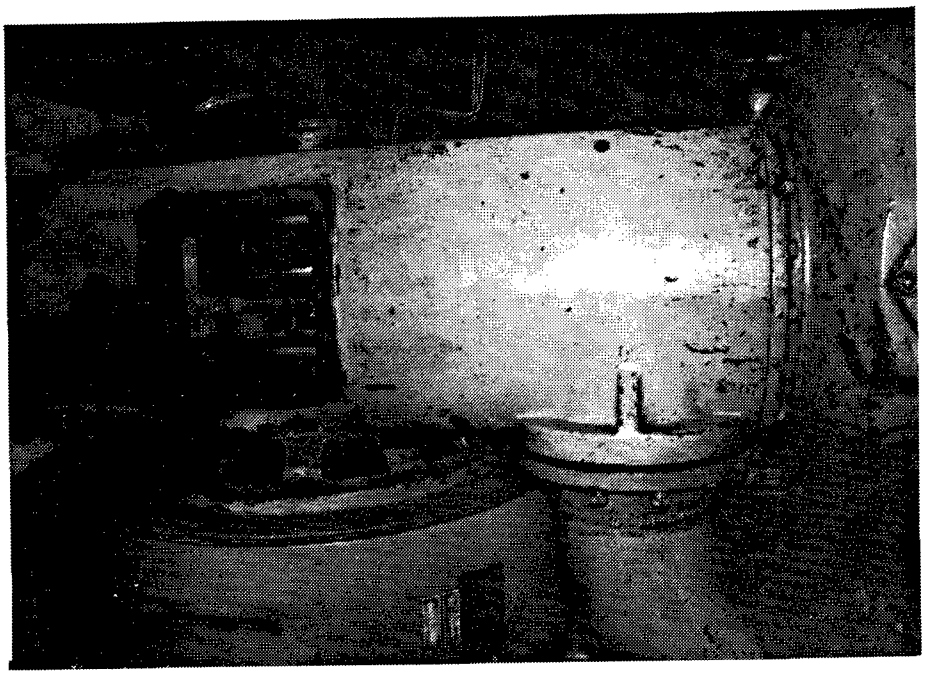

Figure 254. Building 1890: An Ingersoll-Rand air compressor in the Box Repair Building.

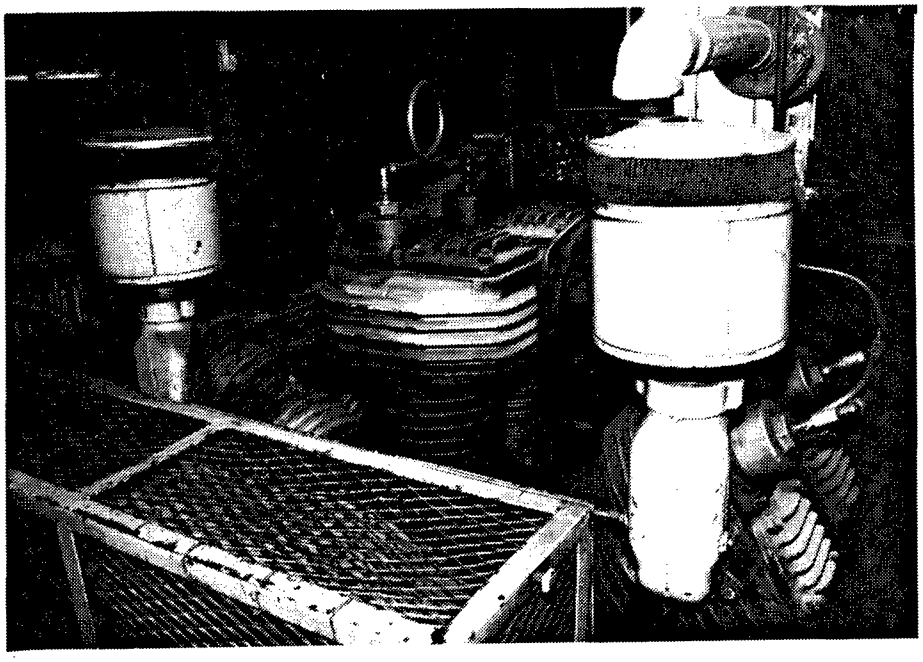

Figure 255. Building 1890: Worthington air compressor.

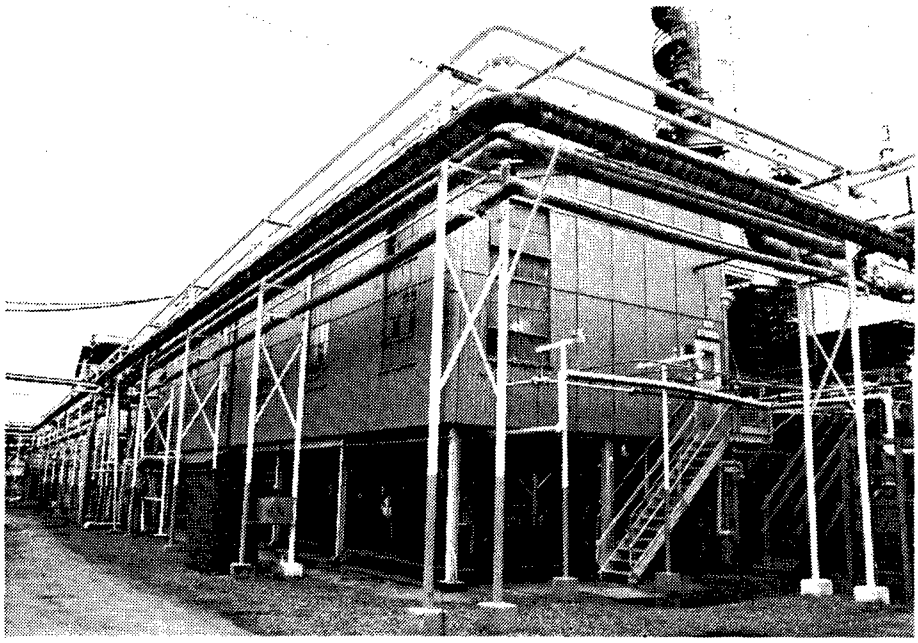

Figure 256. Building 702: Oxidation House.

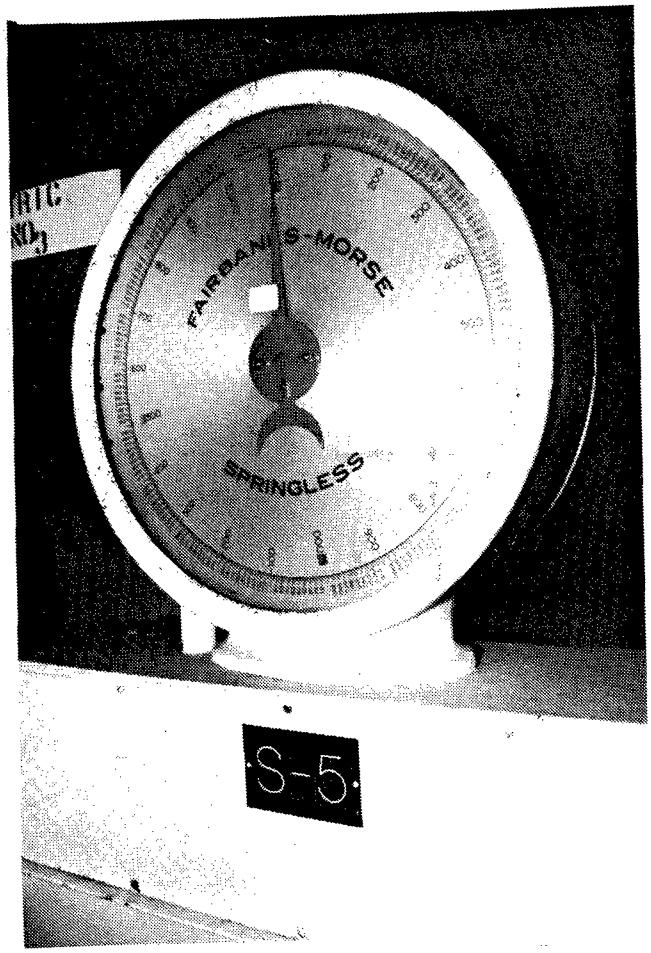

Figure 257. Building 702: Fairbanks-Morse Springless scale.

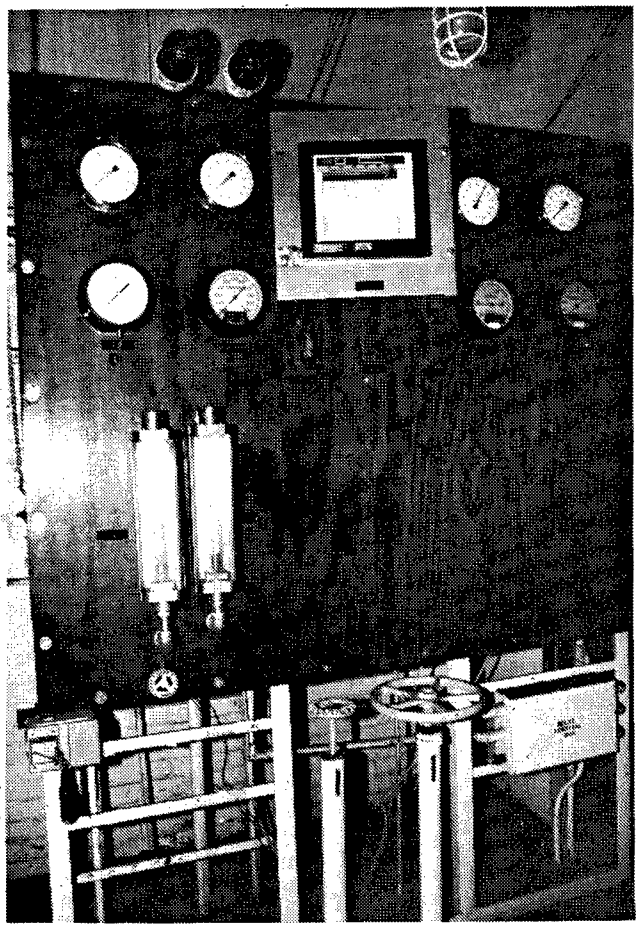

Figure 258. Building 702: Control Panel.

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Greer, M.

n.d. *Process Description: Single Base Propellant Manufacturing Area.* Indiana Army Ammunition Plant, Charleston, Indiana.

MacDonald and Mack Partnership

1984 *Historic Properties Report: Radford Army Ammunition Plant (Including the New River Unit) Radford, Virginia.* Prepared for the Historic American Buildings Survey/Historic Engineering Record, the National Park Service, and the U.S. Department of the Interior.

Thomson, H., and L. Mayo

1991 *United States Army in World War II: The Technical Services: The Ordnance Department Procurement and Supply.* Center of Military History, United States Army, Washington, D.C.

APPENDIX A

PHOTOGRAPHIC DATA SHEETS

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 1

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
5	200	General Instruction Building with four wings containing: General Purpose Administration, Change House, and General Purpose Warehouse, north front east side	SW	03/21/94	Hiatt
6	200	Wing 1 of the General Instruction Building followed by wings 2, 3, & 4 (the building is in disuse except for media services), south back and west side	NE	03/21/94	Hiatt
7	263	Telephone Building (currently utilized), south back and west side	NE	03/21/94	Hiatt
8	203	Garage, currently serves as a data center, north front and west side	SE	03/21/94	Hiatt
9	203	Air conditioner, dated 1964, on the south side of the Data Center/Garage		03/21/94	Hiatt
10	215	General Purpose Administration Building, west front and north side	SE	03/21/94	Hiatt
11	216	Fitness Center or Gym, north front and east side	SW	03/21/94	Hiatt
12	216	West side of Gym	N	03/21/94	Hiatt
13	213	General Purpose Warehouse with wings, formerly housed Plant Archives, north front and east side	SW	03/21/94	Hiatt
14	239	Storage Building connected to the General Purpose Warehouse (Building 213) by a modern extension, south back and west side	NE	03/21/94	Hiatt
15	4723	General Purpose Warehouse, contains two walk-in, wooden, refrigerators, north front and east side		03/21/94	Hiatt
16	4723	General Purpose Warehouse: Refrigerator by Hill Cold Storage of Trenton, N.J., (model JJ5258 94229 S11400) (RFA10094)	W	03/21/94	Hiatt
17	207	Single story Barracks, south back east side	NW	03/21/94	Hiatt
18	206	Two story Barracks, south back and west side	NE	03/21/94	Hiatt
19	236	Storage/Workshop for the Staff Villages recreation equipment, south back and west side	NE	03/21/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 1

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
20	229	Interior Courtyard, rumored to have been built around a grave (Montgomery 1860's)	NW	03/21/94	Hiatt
21	229	Admininstration Building where credit union was housed, currently used by Safety Office, east front and south side	NW	03/21/94	Hiatt
22	235	Police Station, east front and south side	NW	03/21/94	Hiatt
23	234	Cafeteria (currently in use), west back and south side	NE	03/21/94	Hiatt
24	205	Hospital/Clinic with beds, east front and south side	NW	03/21/94	Hiatt
25	201	Propellent Laboratory, east back and south side	NW	03/21/94	Hiatt
26	519	Laboratory Storage building with red brick firewalls dividing the building into thirds, east front and south side	NW	03/21/94	Hiatt
27	201 & 3562	Propellant Laboratory (#201 - background) and Inert Storage Building (#3562 - foreground), east front and south side	NW	03/21/94	Hiatt
28	227	Brick Change House, east front and south side	NW	03/21/94	Hiatt
29	4728	Cinder Block Change House with Building 227 in the background, east and south sides	NW	03/21/94	Hiatt
30	222	Two Story Fire Station containing bays 1 through 4, south front and west side	NE	03/21/94	Hiatt
31	4705-2	Fire Station containing Bays 5 through 6 (with Building 222 in background), south front and west side	NE	03/21/94	Hiatt
32	500	Combined Shop for metal and wood working, south back and east side	NW	03/21/94	Hiatt
33	505	Lumber and Pipe Shed with aluminum siding, south back and west side	NE	03/21/94	Hiatt
34	512	Line Crew Shop sided with fiberglass and asbestos, south front and east side	NW	03/21/94	Hiatt
35	400	Main Power Plant, (power is generated from coal and supplies the entire plant), north front and west side	SE	03/21/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 1

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
36	400	Main Power Plant, detail of masonry, south back and west side	NE	03/21/94	Hiatt
37	508	Salvage and Surplus Property Building		03/21/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 2

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	500	Machine Shop: Bridge metal machine by Ingersol (RFA 668) (serial #16900)		03/21/94	Hiatt
2	500	Machine Shop: Metal shaper by Atlas of Kalamazoo, MI 1944-1947 (model 7B) (RFA 12178)		03/21/94	Hiatt
3	500	Machine Shop: Punch Press by Loshbough-Jordan of Ekhart, IN (model #5) (RFA611)		03/21/94	Hiatt
4	500	Machine shop: Punch press by Loshbough-Jordan of Ekhart, IN (model #5) (RFA611)		03/21/94	Hiatt
5	500	Machine Shop: Punch Press by Loshbough-Jordan of Ekhart, IN (model #2) (RFA 102183)		03/21/94	Hiatt
6	500	Machine Shop: Metal Saw by Peerless (RFA 613)		03/21/94	Hiatt
7	500	Machine Shop: Metal Saw by Peerless (RFA 613)		03/21/94	Hiatt
8	500	Machine Shop: Turrat by Warner and Swasen of Clevland, OH (model #3)(RFA 595)		03/21/94	Hiatt
9	500	Machine Shop: Honing by Sunnen of St. Louis, MO (RFA 599)		03/21/94	Hiatt
10	500	Sheet Metal Shop: Spot welder by National Electric Welding of Bay City, MI (RFA 11640)		03/21/94	Hiatt
11	500	Mill Right Shop: Sheet metal press by Columbia Machinery & Engineering of Hamilton, OH (RFA 11752)		03/21/94	Hiatt
12	500	Mill Right Shop: Drill press by Buffalo Machinery of Buffalo, NY (model #16) (RFA 619)		03/21/94	Hiatt
13	500	Mill Right Shop: Drill press by Buffalos Machinery of Buffalo, NY (model #16) (RFA 619)		03/21/94	Hiatt
14	500	Mill Right Shop: Iron worker by Buffalo Machinery of Buffalo, NY (RFA 11661)		03/21/94	Hiatt
15	500	Mill Right Shop: detail of wood floor. Darker blocks are original and lighter blocks are replacements.		03/21/94	Hiatt
16	520	Weld Shop: An 800lb., single frame, 1918 Steam Hammer by Baldwin-Lima-Hamilton (RFA 702)		03/21/94	Hiatt

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PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 2

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
17	520	Weld Shop: Forge by Champion Blower and Forge Company (RFA 10262)		03/21/94	Hiatt
18	500	Pipe Shop: Landis threading machine for 6 to 12 inch pipe (RFA 623)		03/21/94	Hiatt
19	500	Pipe Shop: Marvel #9 Pipe Saw by Armstrong-Blum Manufacturing Company of Chicago, IL (RFA 617)		03/21/94	Hiatt
20	514	General Storehouse used for metal storage, east front and north side	SW	03/21/94	Hiatt
21	520	Weld Shop, north front and west side	SE	03/21/94	Hiatt
22	521	Gas Cylinder Store (for welding gas), note the firewall, west front and north side	SE	03/21/94	Hiatt
23	700	Air Compressor House, west front and south side	NE	03/21/94	Hiatt
24	700	Air Compressor House: 1940 Ingersol-Rand Air Compressor (model 1210-HM-2) (REA 738)		03/21/94	Hiatt
25	700	Air Compressor House: Ingersol-Rand Air Compressor (model 1010-HM-2)		03/21/94	Hiatt
26	700	Air Compressor House: Control panel for air compressors #6 and #8 (GE RFA 15568)		03/21/94	Hiatt
27	700	Air Compressor House: Exciter Motor that converts DC to AC for the air compressor control panel		03/21/94	Hiatt
28	226	Tire Storage Shed with aluminum siding, west front and north side	SE	03/21/94	Hiatt
29	225	Smokeless Powder Magazine, north side		03/21/94	Hiatt
30	225	Smokeless Powder Magazine, north side		03/21/94	Hiatt
31	225	Smokeless Powder Magazine: Exterior of barricade wall, north front and west side	SE	03/21/94	Hiatt
32	3718	Change House, south front and east side	NW	03/21/94	Hiatt
33	223	Sentry Station/Plant Gate House #3, north back and east side		03/21/94	Hiatt

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PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 2

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
34	3716 & 3717	Two, connected Change Houses, south back		03/21/94	Hiatt
35	7808	Change House for men, east front		03/21/94	Hiatt
36	7809	Change House for Women, east front and north side	SW	03/21/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 3

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
0	1007	Acid Screening House, north front and west side	SE	03/22/94	Hiatt
2	1012	Four story, brick, Nitrating House (currently on stand by), south back and west side	NE	03/22/94	Hiatt
3	1014	Emergency Catch House, north front and west side	SE	03/22/94	Hiatt
4	1012	Nitrating House, first floor: Nitrating equipment & buckets for collection		03/22/94	Hiatt
5	1012	Nitrating House, second floor: Wringer		03/22/94	Hiatt
6	1012	Nitrating House, second floor: Wooden propeller fan with motor, looking north to outside	N	03/22/94	Hiatt
7	1012	Nitrating House, second floor: Wooden propeller fan with motor, inside looking south	S	03/22/94	Hiatt
8	1012	Nitrating House, third floor: Nitrating Acid Tank		03/22/94	Hiatt
9	1012	Nitrating House, third floor: Dipping pot for cotton where cotton was mixed with acid		03/22/94	Hiatt
10	1012	Nitrating House, third floor: Cyclone cotton hopper where cotton from the Dry Cotton conveyor was received.		03/22/94	Hiatt
11	1012	Nitrating House, third floor: Cotton Scale		03/22/94	Hiatt
12	1012	Nitrating House, third floor: Cotton Scale		03/22/94	Hiatt
13	1012	Nitrating House, third floor: Wash basin		03/22/94	Hiatt
14	1012	Nitrating House, third floor: Trolley tracks for transporting cotton from the Dry Cotton conveyor to the cotton dipping pots (no trollies were present)		03/22/94	Hiatt
15	1012	Nitrating House, fourth floor: wringers/drive motor surrounded by four dipping pot agitators under safety cages		03/22/94	Hiatt
16	1012	Nitrating House, fourth floor: Pressure tank		03/22/94	Hiatt
17	1010	Cotton Dry House & Conveyor Building with aluminum siding, south back and west side	NE	03/22/94	Hiatt
18	2019	Boiling Tub House, south front and west side	NE	03/22/94	Hiatt

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PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 3

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
19	2019	Boiling Tub House, second floor: steel Boiler tubs containing water		03/22/94	Hiatt
20	2019	Boiling Tub House, first floor: Bottom of boiler tubs		03/22/94	Hiatt
21	2010	Cotton Dry House and Conveyor Building with spray foam on exterior walls, south back		03/22/94	Hiatt
22	1022	Beater House, south front and west side	NE	03/22/94	Hiatt
23	1022	Beater House, second floor: wooden Beater tub		03/22/94	Hiatt
24	1022	Beater House, first floor: Jordon 6, Mamoth Jr., water pumps with electric motor by General Electric		03/22/94	Hiatt
25	1022	Beater House, first and second floors: beater tub and Jordan water pump		03/22/94	Hiatt
26	2026	Final Wringer House, note wood frame under foam spray, south front and east side	NW	03/22/94	Hiatt
27	2026	Final Wringer House, first floor: Wringer by American Machine and Metals Inc. of Ameslan, IL		03/22/94	Hiatt
28	2026	Final Wringer House, first floor: Scale (RFA 13993)		03/22/94	Hiatt
29	2026	Final Wringer House, first floor: Chute from a wringer, note the track on which the buckets were maneuvered		03/22/94	Hiatt
30	2026	Final Wringer House, first floor: Cotton Buckets		03/22/94	Hiatt
31	1500	Dehydration Press House with cinderblock firebreaks, north front and west side	SE	03/22/94	Hiatt
32	1501	Alcohol Pump and Accumulator House which served as the alcohol supply house for a Dehydration Press House, south front and west side	NE	03/22/94	Hiatt
33	1501	Alcohol Pump and Accumulator House: Sundyne Alcohol Accumalator Pump(RFA 14155)		03/22/94	Hiatt
34	1501	Alcohol Pump and Accumulator House: Worthington Piston Pump (RFA 1851)		03/22/94	Hiatt
35	1501	Alcohol Pump and Accumulator House: Alcohol Accumulator (with the weight partially disassembled) by Watson-Stillman Company of Roslie, N.J.		03/22/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 3

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
36	1501	Alcohol Pump and Accumulator House: Heat reclaiming unit with temperature monitoring controls and a circulating pump with 1.5 hp motor		03/22/94	Hiatt
37	1515	Two story, cinder block, Change House		03/22/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 4

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
0	1500	Dehydration Press House, first floor: Scale (forefront), and Vertical Dehydration Press manufactured by Wood		03/22/94	Hiatt
1	1555	Activated Carbon and Recovery House, south front and west side	NE	03/22/94	Hiatt
2	1506	Diphenylamine (DPA) Mix House: DPA Storage Tank (RFA 1950)		03/22/94	Hiatt
3	1506	DPA Mix House: 1945 Pressure Tank by Staife of Oakmont, PA		03/22/94	Hiatt
4	1506	DPA Mix House, view from catwalk: Mix Tank (RFA 18340) with Scale in background, control valves are stacked on top of the unit		03/22/94	Hiatt
5	1506	DPA Mix House: Scale by Howe Richardson		03/22/94	Hiatt
6	1506	Sprinkler Valve House		03/22/94	Hiatt
7	1506 & 1506B	Diphenylamine Mix House (#1506 - right), cyclone ventalator (middle) and Motor House (1506B - left), south side		03/22/94	Hiatt
8	1506	Slide escapes on south side of DPA Mix House, west front and south side	NE	03/22/94	Hiatt
9	1506B	Motor House for DPA Mix House, the building in front contains the belts (upstairs to the left) and motor (1st floor to the right) that drove the mixer in the DPA Mix House, east back south side	NW	03/22/94	Hiatt
10	1508	Mix House with an uncovered walkway connecting the two halves of the building, each half contains eight bays, east front and south side	NW	03/22/94	Hiatt
11	1508	Uncovered walkway between two halves of the Mix House, south side		03/22/94	Hiatt
12	1508	Mixer (RFA 1961) in the Mix House		03/22/94	Hiatt
13	1508	Belt-driven Mixer in the Mix House		03/22/94	Hiatt
14	1508	Macerator in the Mix House		03/22/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 4

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
15	1508	Macerator in the Mix House, view looking into chute at macerator teeth		03/22/94	Hiatt
16	1508	Mixer House: Electric motor with belt to power machines in the Mixer House		03/22/94	Hiatt
17	4339	Latrine with two stalls, flush toilets, sink, and mirror		03/22/94	Hiatt
18	1550	Ingredient Store House, south front and west side	NE	03/22/94	Hiatt
19	1511	Block Press House, south back and east side	NW	03/22/94	Hiatt
20	1511	Block Press House: Vertical Blocking Press by Faruar Company (RFA 2020)		03/22/94	Hiatt
21	1511	Another type of Press used in the Block Press House		03/22/94	Hiatt
22	1511	Block Press House: high pressure valves for the macaroni machine		03/22/94	Hiatt
23	1513	Finishing Press and Cutting House with a loading station equipped with four garage-like doors, and cyclone ventilators the on back side of the building, south back and west side	NE	03/22/94	Hiatt
24	1513	Finishing Press and Cutting House, first floor: Cutting Machines by McKiernan Terry Company Manufacturing and Engineering of Dover, NJ (RFA 2067)		03/22/94	Hiatt
25	1513	Finishing Press and Cutting House: Angle Buggy used to transfer powder. The buggy is lead lined, and has rubber wheels with metal spokes		03/22/94	Hiatt
26	1513	Macaroni separator in the Finishing Press and Cutting House		03/22/94	Hiatt
27	1513	Finishing Press and Cutting House, second floor: Macaroni press by Farquhar of York, PA (25083-1) (RFA 2051)		03/22/94	Hiatt
28	1513	Finishing Press and Cutting House, second floor: Macaroni press by Farquhar of York, PA (25083-1) (RFA 2051)		03/22/94	Hiatt
29	1513	Finishing Press and Cutting House, second floor: Macaroni press by Farquhar of York, PA (25083-1) (RFA		03/22/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 4

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
		2051)			
30	1513	Macaroni separator without its cover in the Finishing Press and Cutting House		03/22/94	Hiatt
31	4710-D1	Latrine with a shingled roof		03/22/94	Hiatt
32	3553	Macaroni separator		03/22/94	Hiatt
33	1521A	Chilled Water Pump House, south front and west side	NE	03/22/94	Hiatt
34	1521A	Chilled Water Pump House: Chilled water circulating pump and motor by Ingersol Rand (RFA 2175)		03/22/94	Hiatt
35	1521	Low pressure centrifugal pump by Westinghouse and Worthington		03/22/94	Hiatt
36	1521	Worthington 120, High pressure piston pump and motor		03/22/94	Hiatt
37	1521	Different angle, Worthington 120, High pressure piston pump and motor		03/22/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 5

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	1521	Low pressure hydraulic tank reservoir for hydraulic oil (FRA2167)		03/22/94	Hiatt
2	1521	High pressure hydraulic tank (reservoir)		03/22/94	Hiatt
3	1521	Lead Lined, wooden, Water Filter Tank with floats for monitoring water levels (RFA 2181)		03/22/94	Hiatt
4	2042	Sentry Station/Gate house #2, south front		03/22/94	Hiatt
5	1622	Solvent Recovery House. Outside the barricade to the left is the Solvent Recovery Blower House, to the right is the Elevator/Stair Building, south front and west side	NE	03/23/94	Hiatt
6	1622	Solvent Recovery House: Depository for powder to tank		03/23/94	Hiatt
7	1622	Solvent Recovery House, first floor: Bottom of tank (RFA 3180)		03/23/94	Hiatt
8	1622	Solvent Recovery House, inside barricaded wall: note cement breaks & aluminum walls built to direct possible explosion		03/23/94	Hiatt
9	1622	Solvent Recovery House: Filter blowers between a blower house and barricade, east side		03/23/94	Hiatt
10	1622	Solvent Recovery House: Blowers and their motors		03/23/94	Hiatt
11	1622	Second angle of blowers and their motors in the Solvent Recovery House		03/23/94	Hiatt
12		Solvent Recovery House without a barricade		03/23/94	Hiatt
13	1668	Water Dry House, south back and west side	NE	03/23/94	Hiatt
14	1668	Wooden water tanks used for the water drying process in the Water Dry House		03/23/94	Hiatt
15	1731	Propellant Transfer House, steel tanks		03/23/94	Hiatt
16	4909-3	Solvent Recovery House, different design with a road between the barricaded Solvent Recovery House and its Elevator/Stair Building, west front		03/23/94	Hiatt
17	1825 & 1875	Final Blend House (#1825 - front) connected to Can Pack House (#1875) by a conveyor system, south front and	NE	03/23/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 5

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
		west side			
18	1825	Blender (blends powder & carbon into powder) (RFA 13995) in the Final Blend House		03/23/94	Hiatt
19	1825	Blender (blends powder & carbon into powder) (RFA 13995) in the Final Blend House		03/23/94	Hiatt
20	1825	Final Blend House, first floor: Blender		03/23/94	Hiatt
21	1825	Final Blend House, first floor: view of Blender from above		03/23/94	Hiatt
22	1825	Final Blend House, second floor: Cleveland, Worm gear reduction unit		03/23/94	Hiatt
24	1825	Final Blend House, first floor: Powder conveyor system that transferred powder to the Can Pack House		03/23/94	Hiatt
25	1825	Final Blend House, third floor: Chute-dump station where powder enters the blending process		03/23/94	Hiatt
26	1875	Can Pack House, first floor: Chute for dispensing powder		03/23/94	Hiatt
27	1875	Can Pack House, first floor: Conveyor belts, empty cans entered on left, and filled cans exited on right		03/23/94	Hiatt
28	1875	Can Pack House: View of chute extending from the second floor to the first floor		03/23/94	Hiatt
29	1875	Can Pack House, third floor: Top of powder chute		03/23/94	Hiatt
30	1875	Can Pack House: Entrance, east front and south side	NW	03/23/94	Hiatt
31	1828	Final Blending House and Control House, east front and south side	NW	03/23/94	Hiatt
32	1763	Barricaded Rest House, south front and east side	NW	03/23/94	Hiatt
33	9387-1	Cinder block Warehouse, south back and west side	NE	03/23/94	Hiatt
34	1888	Box Storage Building with aluminum siding, north front and west side	SE	03/23/94	Hiatt
35	4601-3	Smokeless Powder Magazine constructed of sand filled, ceramic tiles, north front and west side	SE	03/23/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 5

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
36	1953	Magazine with three earthen sides, south front and east side	NW	03/23/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 6

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
0	1958	Smokeless Powder Magazine with earth filled wooden barricade and three earthen backed wooden barricades, south front and east side	NW	03/23/94	Hiatt
1	1918	Igloo or Subterranian Magazine with an earth backed, cement barricade in front of the entrance, north front and west side	SE	03/23/94	Hiatt
2	1993	Magazine Area Office: Interior view of a Latrine with a hand wash basin		03/23/94	Hiatt
3	1993	Magazine Area Office with latrine, south front and west side	NE	03/23/94	Hiatt
4	4951-3	Billet Rework House with ramps to accomodate buggies, west front and south side	NE	03/23/94	Hiatt
5	4912-01	Large Grain Hold House, south front and west side	NE	03/23/94	Hiatt
6	4912-02	Small Grain Loading House, north front and west side	SE	03/23/94	Hiatt
7	4924-02	Large Saw House with barricades spanning the east and north sides, south front and east side	NW	03/23/94	Hiatt
8	4924-6	Machine and Saw House with cinder block firebreaks that do not extend beyond the building walls, north front		03/23/94	Hiatt
9	4924-05	MK #90 Finishing Operations, north front and west side	SE	03/23/94	Hiatt
10	7503	Magazine with an earthen barrier and earth filled wooden barricade, north front and west side	SE	03/23/94	Hiatt
11	6401	Test House where ballistics were tested, note tar and chip berm on north side of building, west front and south side	NE	03/23/94	Hiatt
12	2244	Ballistic Primer Magazine, north front and west side	SE	03/23/94	Hiatt
13	2924-1	Large, Motor Loading House with one wall barricaded, south front and west side	NE	03/23/94	Hiatt
14	4329	Power House #2, (shut down), north front		03/23/94	Hiatt
15	4329	Close up of Power House #2. Note that coal elevator is not vintage		03/23/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 6

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
14	4329	Power House #2, (shut down), north front		03/23/94	Hiatt
15	4329	Close up of Power House #2. Note that coal elevator is not vintage		03/23/94	Hiatt
16	4329	Power House #2: Ash Silos, south and east sides	NW	03/23/94	Hiatt
17	4329	Power House #2: A ceramic coal silo (right) and a steel coal silo (left) and a coal elevator, south side	N	03/23/94	Hiatt
18	420-01	A and B Line Acid Waste Water Plant, south front	N	03/23/94	Hiatt
19	420-01	A and B Line Acid Waste Water Plant, south front	N	03/23/94	Hiatt
20	420-01	Slaker that separates water from solvent in the A&B Line Acid Waste Water Plant		03/23/94	Hiatt
21	420-01	Close up of slaker in A&B Line Acid Waste Water Plant		03/23/94	Hiatt
22	420-01	Auxillary Sludge Pump in A&B Line Acid Waste Water Plant		03/23/94	Hiatt
23	420-01	Second angle of Auxillary Sludge Pump in A&B Line Acid Waste Water Treatment Plant		03/23/94	Hiatt
24	9310-01	Rolled Powder Building of Rolled Powder Area 4, south front and west side	NE	03/23/94	Hiatt
25	9310-01	Rolled Power Building of Rolled Powder Area 4, south front and west side	NE	03/23/94	Hiatt
26	9354	Compressor House: Worthington Compressors (RFA 8901)		03/23/94	Hiatt
27	9354	Compressor House: second angle of Worthington Compressors (RFA 8901)		03/23/94	Hiatt
28	9361-03	Cinder block Change House, south and west sides	NE	03/23/94	Hiatt
29	9309-03	Rolled Powder Building, south front and south side		03/23/94	Hiatt
30	221-5	Sentry House, north and west sides	SE	03/23/94	Hiatt

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Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 6

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
34	9310-01	Even speed machine by Linkbelt of Philadelphia in the Rolled Powder Building		03/23/94	Hiatt
35	9309-03	Even Speed or "Even Mill Machine" by Linkbelt of Philadelphia in the Rolled Powder Building		03/23/94	Hiatt

GEO-MARINE INC.
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Project #: 1114-014 AHC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 7

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
0	4421-08	Equipment Repair Shop originally used as a Rigger House. The tall board panels on the right side of the building served as doors to accomodate cranes, east front and south side	NW	03/23/94	Hiatt
1	1561	Block Breaker House, west front and south side		03/23/94	Hiatt
2	1561	Interior of Block Breaker House		03/23/94	Hiatt
3	5008-1	Fifteen foot Press House, note front of bldg, door to left is to locker room, east front and north side	SW	03/24/94	Hiatt
4	5008-1	15ft Press House: Hydraulic press for production of rocket propellent (RRA 8367)		03/24/94	Hiatt
5	5008-1	15ft Press House: block loading, piston Hydraulic press		03/24/94	Hiatt
6	5008-1	15ft Press House: Different angle of hydraulic press showing die front		03/24/94	Hiatt
7	5008-1	15ft Press House: Cutting Machine by McKiernan-Terry Company Manufacturing Engineers of Dover, NJ (RFA 12449). This machine was brought to Radford from Sunflower Army Ammunition Plant		03/24/94	Hiatt
8	5008-1	15ft Press House: second angle of Cutting Machine by McKiernan-Terry Company Manufacturing Engineers of Dover, NJ (RFA 12449). This machine was brought to Radford from Sunflower Army Ammunition Plant		03/24/94	Hiatt
9	5008-1	15ft Press House: Cutting Machine by McKiernan-Terry Company Manufacturing Engineers, of Dover, NJ (RFA 12449). This machine was brought to Radford from Sunflower Army Ammunition Plant		03/24/94	Hiatt
10		Void		03/24/94	Hiatt
11	926	12 inch Well with Pump House in Magazine Area, south and east sides	NW	03/24/94	Hiatt
12	926	Peerless Pump, model #16251 (RFA 11101) for 12 inch Well and Pump House in Magazine Area		03/24/94	Hiatt
13	408	River Pump House, south front and east side	NW	03/24/94	Hiatt
14	408	River Pump House: Ingersol-Rand Water Pumps with Westinghouse induction motor (RFA 174) - in use		03/24/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 7

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
15	408	River Pump House: second angle of Ingersol-Rand Water Pumps with Westinghouse Induction motor (RFA 174) - in use		03/24/94	Hiatt
16	3727	Maintenance Shop currently used for storage, east front and south side	NW	03/24/94	Hiatt
17	3713	Mobilization Storage Building. Note interior supportive portion		03/24/94	Hiatt
18	3713	Mobilization Storage Building, east front and south sides	NW	03/24/94	Hiatt
19	7124-02	Nibbling House with blow away panel on roof, east front and south side	NW	03/24/94	Hiatt
20	7100	Cinder block and shingle Office Building with incinerator, east back and south side	NW	03/24/94	Hiatt
21	7113	Rolled Powder Building in Rolled Powder Area #1, due to terrain this building is L-shaped, east front and south side	NW	03/24/94	Hiatt
22	7800	Extruded Grain Finishing House, note protruding bays, west front and south side	NE	03/24/94	Hiatt
23	501	Locomotive Shop, west and south side	NE	03/24/94	Hiatt
24	501	Maintenance pit within Locomotive Shop		03/24/94	Hiatt
25	419	Drinking Water Plant with original wooden water tanks, east front and south side	NW	03/24/94	Hiatt
26		Void		03/24/94	Hiatt
27	409	Water Filtration Plant: Pump by Ingersol-Rand Company (RFA 205)		03/24/94	Hiatt
28	409	Water Filtration Plant: second angle of Pump by Ingersol-Rand Company (RFA 205)		03/24/94	Hiatt
29	409	Water Filtration Plant: Pumps (no longer in use) in the River Pump House		03/24/94	Hiatt
30	409	Water Filtration Plant: New angle of Pumps		03/24/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 7

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
31	409	Water Filtration Plant: Ingersol-Rand, Back washing filters (RFA 209), no longer in use		03/24/94	Hiatt
32	409	Water Filtration Plant: New angle of back washing filters by Ingersol-Rand (RFA 209)		03/24/94	Hiatt
33	419	Guages in Drinking Water Plant		03/24/94	Hiatt
34	419	Carbon tank in Drinking Water Plant		03/24/94	Hiatt
35	419	Drinking Water Plant: Dry chemical feeder for carbon tanks (RFA 3859) by Wallace & Tiernan Company of Newark, NJ		03/24/94	Hiatt
36	419	Wash water pumps (RFA 440) in Drinking Water Plant		03/24/94	Hiatt

GEO-MARINE INC.

PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 8

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	407	Water Filtration Plant, south front and west side	NE	03/24/94	Hiatt
2	419	Carbon Tank (RFA 8578) in Drinking Water Plant		03/24/94	Hiatt
3	419	Drinking Water Plant: Water pump with a non-vintage motor in background		03/24/94	Hiatt
4	521	Magazine Office and Change House with a chimney that serves as a Heater smoke stack, east front and north side	SW	03/24/94	Hiatt
5	521	Spencer Steam heater in the Magazine Office and Change House		03/25/94	Hiatt
6	521	Second angle of Spencer Steam Heater in Magazine Office and Change House		03/25/94	Hiatt
7	225	Quonset Hut functioning as a Maintenance Shop, south front and east side	NW	03/25/94	Hiatt
8	222	Change House, south and west sides	NE	03/25/94	Hiatt
9	221	Boiler Room, east front and west side		03/25/94	Hiatt
10	221	Type C Oil Boiler by Kewanee of Illinois		03/25/94	Hiatt
11	600	Equipment Shed that stores modern equipment, west and south sides	NE	03/25/94	Hiatt
12	710	Sewage pump by Chicago Pump Company (RFA 11432)		03/25/94	Hiatt
13	710	Sewage Treatment Building, west front and east side		03/25/94	Hiatt
14	1107	Igloo Storage Magazine with a ventilator extending from the back of this earthen covered structure, east front and south side	NW	03/25/94	Hiatt
15	4603-32	Richmond Magazine, south front and west side	NE	03/25/94	Hiatt
16	919	Rail Car Scale with the weighing mechanism located under the track		03/25/94	Hiatt
17	919	Close up of Rail Car Scale		03/25/94	Hiatt
18	400	Boiler control panel in the Main Power House		03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 8

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
19	400	Side of boiler in the Main Power House		03/25/94	Hiatt
20	400	Main Power House: View of the turbine section of a Turbine generator by Allis Chalmers of Milwaukee, WI		03/25/94	Hiatt
21	400	Main Power Plant: view of Generator part of turbine generator		03/25/94	Hiatt
22	400	Close up on turbine of Turbine Generator in the Main Power Plant		03/25/94	Hiatt
23	2502	Ether Still House #2, west and south sides	NE	03/25/94	Hiatt
24	1727	Dry Screen House, east front and north side	SW	03/25/94	Hiatt
25		Void (machinary too new)		03/25/94	Hiatt
26	1814B	Buggy Unloading and Control House for the Blending and Glazing House, north front & east side	SW	03/25/94	Hiatt
27	4914	Dust Collection House (currently used as a Screen House), south and east sides	NW	03/25/94	Hiatt
28	1702	Tray House for the "A" Finishing Area (currently used as Waste Accumulation and Sorting House), east and north sides	SW	03/25/94	Hiatt
29	4952-1	Coating House: Coating barrels by Camdon Copper Works of Camdon, NJ (RFA 19115)		03/25/94	Hiatt
30	4952-1	Coating House: Toledo scale used to weigh the water for the coating barrels		03/25/94	Hiatt
31	4952-1	Coating House: Back of coating barrel		03/25/94	Hiatt
32	1800	Glaze barrel in Glaze House		03/25/94	Hiatt
33	1800	Second angle of Glaze Barrel in Glaze House		03/25/94	Hiatt
34	1814	Blending and Glazing House: Ingersol-Rand Air compressor (model #50-8)		03/25/94	Hiatt
35	1814	Blending and Glazing House: New angle of Ingersol-Rand Air compressor (model #50-8)		03/25/94	Hiatt
36	1814	Blending and Glazing House: New angle of Ingersol-Rand Air compressor (model #50-8)		03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 8

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
37	1814	Hofman exhaust system in the Blending and Glazing House		03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 9

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	1814	Blending and Glazing House: screen tank with conveyor belt (screens are absent)		03/25/94	Hiatt
2	1814	Blending and Glazing House: Conveyor belt to end		03/25/94	Hiatt
3	1814	Blending and Glazing House: Conveyor belt to end		03/25/94	Hiatt
4	1814	Blending and Glazing House: Conveyor belt to end		03/25/94	Hiatt
5	1814	Cyclone ventilation unit (RFA 11252) in the Blending and Glazing House		03/25/94	Hiatt
6		Void		03/25/94	Hiatt
7		Void		03/25/94	Hiatt
8		Void		03/25/94	Hiatt
9	1890	Box Repair Storage House: Ingersol-Rand Air compressor		03/25/94	Hiatt
10	1890	Box Repair Building: Second angle of Ingersol-Rand Air compressor (the machine has missing parts and is not in use)		03/25/94	Hiatt
11	1890	Worthington air compressor in the Box Repair Building		03/25/94	Hiatt
12	1890	Second angle of Worthington Air Compressor in the Box Repair Building		03/25/94	Hiatt
13	3524	Chemical Grind House, south front and east side	NW	03/25/94	Hiatt
14	4942	Screen Caustic Cleaning House, south front and west side	NE	03/25/94	Hiatt
15	4705-4	Laundry House: Singer Sewing Machine (EWO 84929)		03/25/94	Hiatt
16	1020	Boiling Tub Settling Pit and Pump House, east side	W	03/25/94	Hiatt
17	1002	Acid Storage Tanks at the Acid Mix and Weigh House, east front and south side	SW	03/25/94	Hiatt
18	2003	Acid Mix and Weigh House and Acid Storage Tanks, east front and north side	NW	03/25/94	Hiatt
19	1025	Poacher and Blender Settling Pit Pump House, (the large structure on the left is not part of this building), north side	S	03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 9

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
20	1546	Ether Storage Tanks, west side		03/25/94	Hiatt
21	1513	Finishing Press and Cutting House equipped with blow panels for explosions, east and north sides	SW	03/25/94	Hiatt
22	2519	West wing of Finishing and Cutting House, east side		03/25/94	Hiatt
23	2519	Horizontal press by Farquhar-York (RFA 5553) in Finishing Press and Cutting House		03/25/94	Hiatt
24	2519	Second angle of Horizontal press by Farquhar-York (RFA 5553) in the Finishing Press and Cutting House		03/25/94	Hiatt
25	2519 & 2518	"Hall" connecting wing of #2519 to wing of #2518, both buildings are Finishing Press and Cutting Houses, south side		03/25/94	Hiatt
26	2518	East wing of Finishing Press and Cutting House, south side		03/25/94	Hiatt
27	500	Brick Combine House, note sidewalk and windows, north side		03/25/94	Hiatt
28	4718	Lead Burner House, north front and west side	SE	03/25/94	Hiatt
29	400	The back side of the Main Power Plant is obscurred by modern equipment, east and north sides	SW	03/25/94	Hiatt
30	3650	Cotton Store Mix House		03/25/94	Hiatt
31	9309-03	Roll Powder House #4: carpet roller (RFA 937)		03/25/94	Hiatt
32	9309-03	Roll Powder House #4: second angle of carpet roller (RFA 937)		03/25/94	Hiatt
33	9309-04	Milling Machine (RFA 9833)		03/25/94	Hiatt
34	9309-04	Second angle of Milling machine (RFA 9833)		03/25/94	Hiatt
35	9309-04	Sheet powder cutting machine (RFA 8656)		03/25/94	Hiatt
36	9309-04	Second angle, Sheet powder cutting machine (RFA 8656)		03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 10

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
1	4723	Cold storage walk-in refrigerator in a General Purpose Warehouse		03/21/94	Hiatt
2		Void		03/21/94	Hiatt
3		Void		03/21/94	Hiatt
4	1908	Section of wooden pipe with a diameter of 15"-16" recovered from between buildings #407 and #409. This pipe is beleived to have carried water from the New River to the Water House		03/22/94	Hiatt
5	229	Tombstone for Hugh B. Montgomery. It currently rests in the courtyard. It reads: "Hugh B.\son of WF & J Montgomery\Died July 24, 1903\Aged 20 years\Death has been here & Borlie Away\A Brother from...		03/22/94	Hiatt
6	263	Central Office: Switch Board by Automatic Electric of Chicago, IL (RFA 10730)		03/22/94	Hiatt
7		Between wall and barricade		03/25/94	Hiatt
8	9309-04	Roll mill (RFA 8688) in the Roll Powder Building		03/25/94	Hiatt
9	9309-04	Punch (RFA 8775) in the Roll Powder Building		03/25/94	Hiatt
10	9309-04	Second angle of Punch (RFA 8775) in Roll Powder Building		03/25/94	Hiatt
11	9309-04	Roll Powder Building: Die-thread machine by Foote Brothers Gear & Machine Company (RFA 8771)		03/25/94	Hiatt
12	9309-04	Roll Powder Building: Second angle of Die-thread machine by Foote Brothers Gear & Machine Company (RFA 8771)		03/25/94	Hiatt
13	9309-04	Roll Powder Building: Third angle of Die-thread machine by Foote Brothers Gear & Machine Company (RFA 8771)		03/25/94	Hiatt
15	9309-04	Roll Powder Building: Adler sewing machine used to sew together sheets of powder (RFA 23923)		03/25/94	Hiatt
16	9309-04	Roll Powder Building: second angle of Adler sewing machine for sewing sheets of powder (RFA 23923)		03/25/94	Hiatt
17	9309-04	Pinch Press by Loshbough Jordon of Elkhart, IN (RFA 9246)		03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

Project #: 1114-014 AMC Task C

Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

Roll Number: 10

Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
18	9309-04	Roll Powder Building: second angle of Pinch press by Loshbough Jordan of Elkhart, IN (RFA 9246)		03/25/94	Hiatt
19	9309-04	Roll Powder Building: third angle of Pinch press by Loshbough Jordan of Elkhart, IN (RFA 9246)		03/25/94	Hiatt
20	9309-04	Roll Powder Building: This machine weighs the correct amount of powder into bags (RFA 9819)		03/25/94	Hiatt
21	9309-04	Roll Powder Building: second angle of machine that weighs the correct amount of powder into bags (RFA 9819)		03/25/94	Hiatt
22	no #	Staff Village House #2 with a porch on far left, and an attached garage on the right, south front and east side	NW	03/25/94	Hiatt
23	no #	Staff Village Duplex (Residence #13 & #15), with porches on either side of the building and a 2 door, unattached garage to the left, north front and west side	SE	03/25/94	Hiatt
24	197	Incinerator Building, north front and west side	SE	03/25/94	Hiatt
25		Void		03/25/94	Hiatt
26	1013	Fume Exhaust and Recovery House for the Main Power Plant		03/25/94	Hiatt
27		Void		03/25/94	Hiatt
28		Void		03/25/94	Hiatt
29		Void		03/25/94	Hiatt
30		Void		03/25/94	Hiatt
31	702	Oxidation House, east front and south side	NW	03/25/94	Hiatt
32	702	Springless Scale by Fairbanks-Morse in the Oxidation House		03/25/94	Hiatt
33	702	Fairbanks-Morse, springless Scale in the Oxidation House		03/25/94	Hiatt
34	702	Control panel in the Oxidation House		03/25/94	Hiatt

GEO-MARINE INC.
PHOTOGRAPHIC DATA SHEET

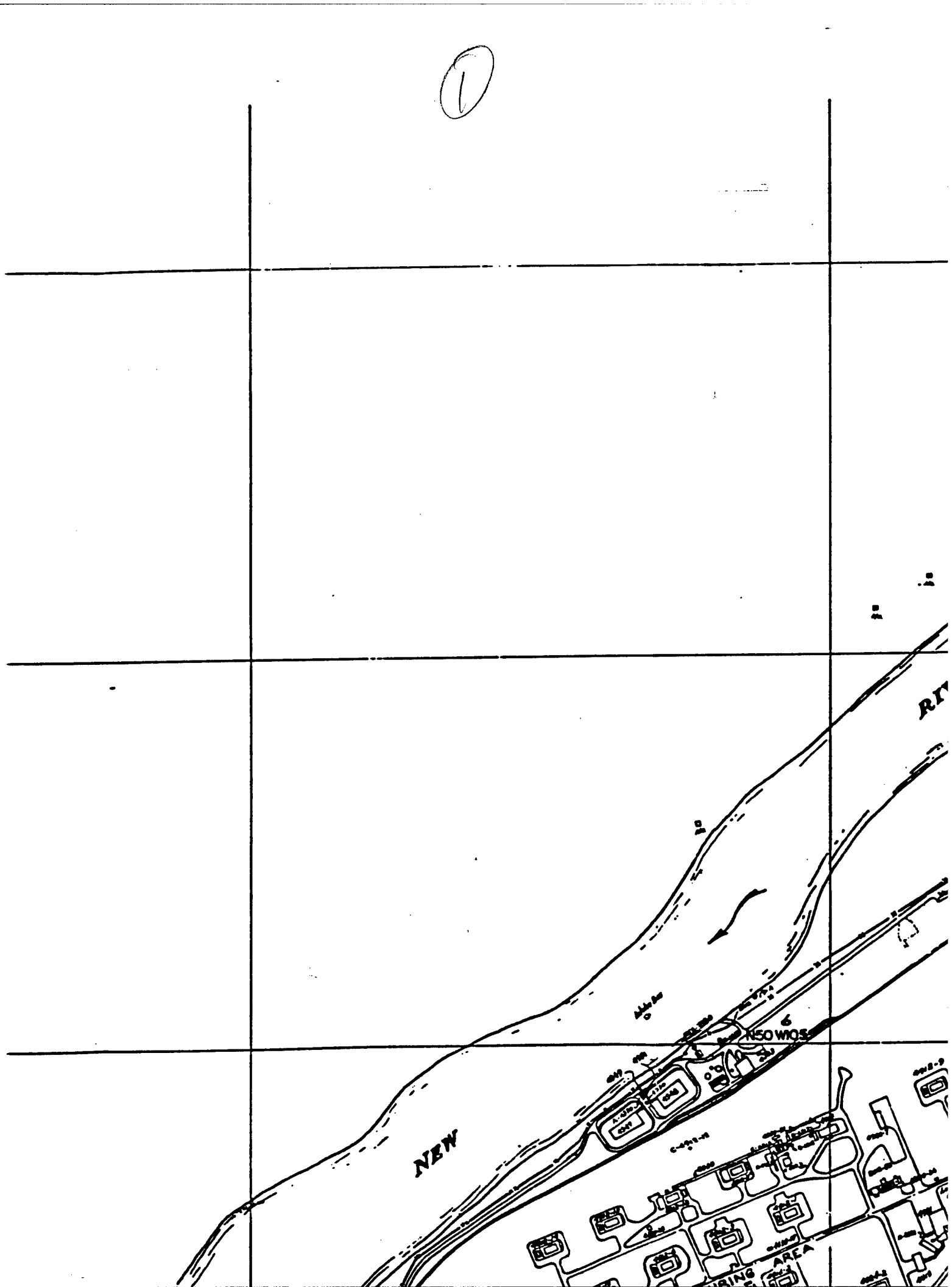
Project #: 1114-014 AMC Task C

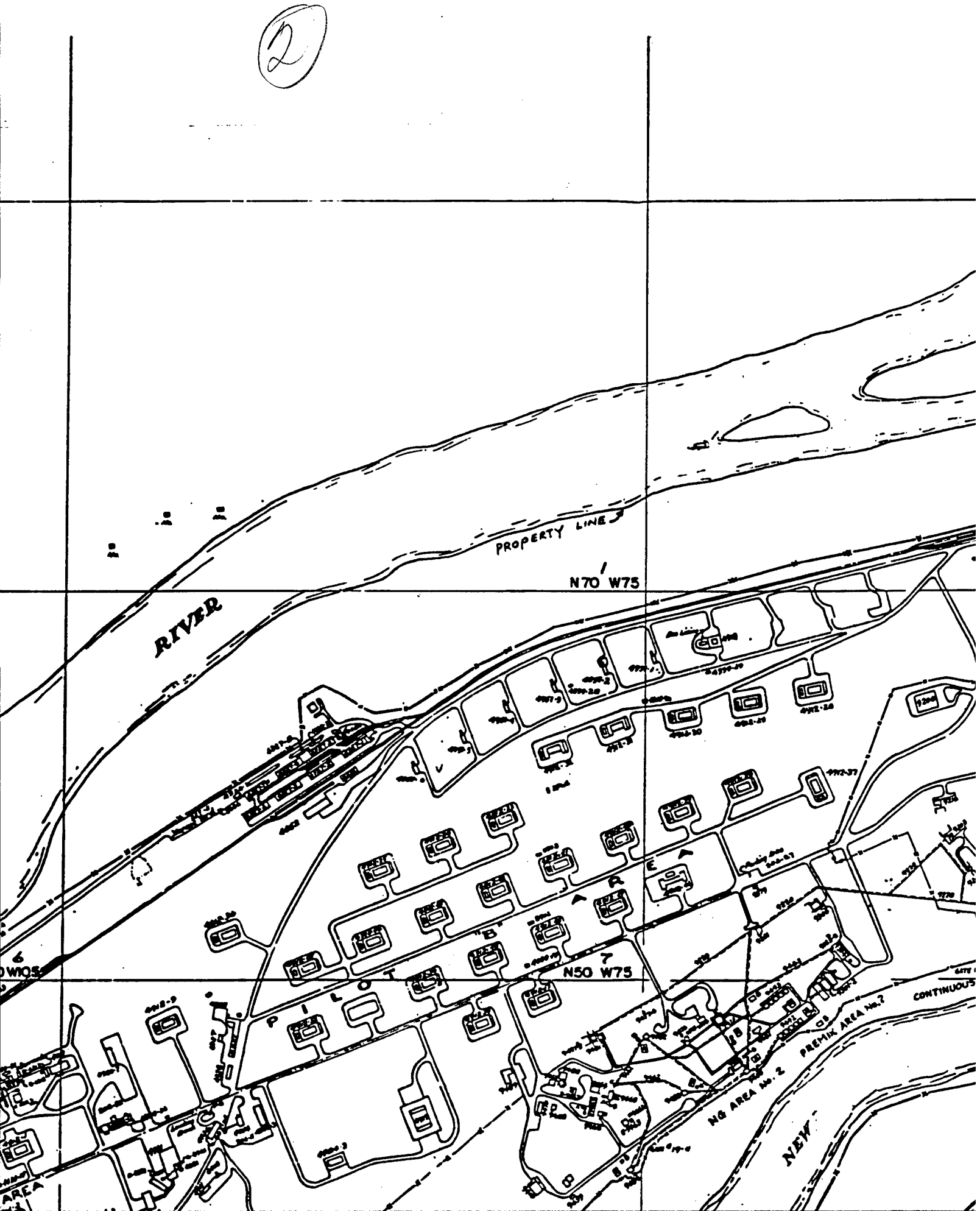
Film: Kodak TMAX black and white

Installation: Radford Army Ammunition Plant

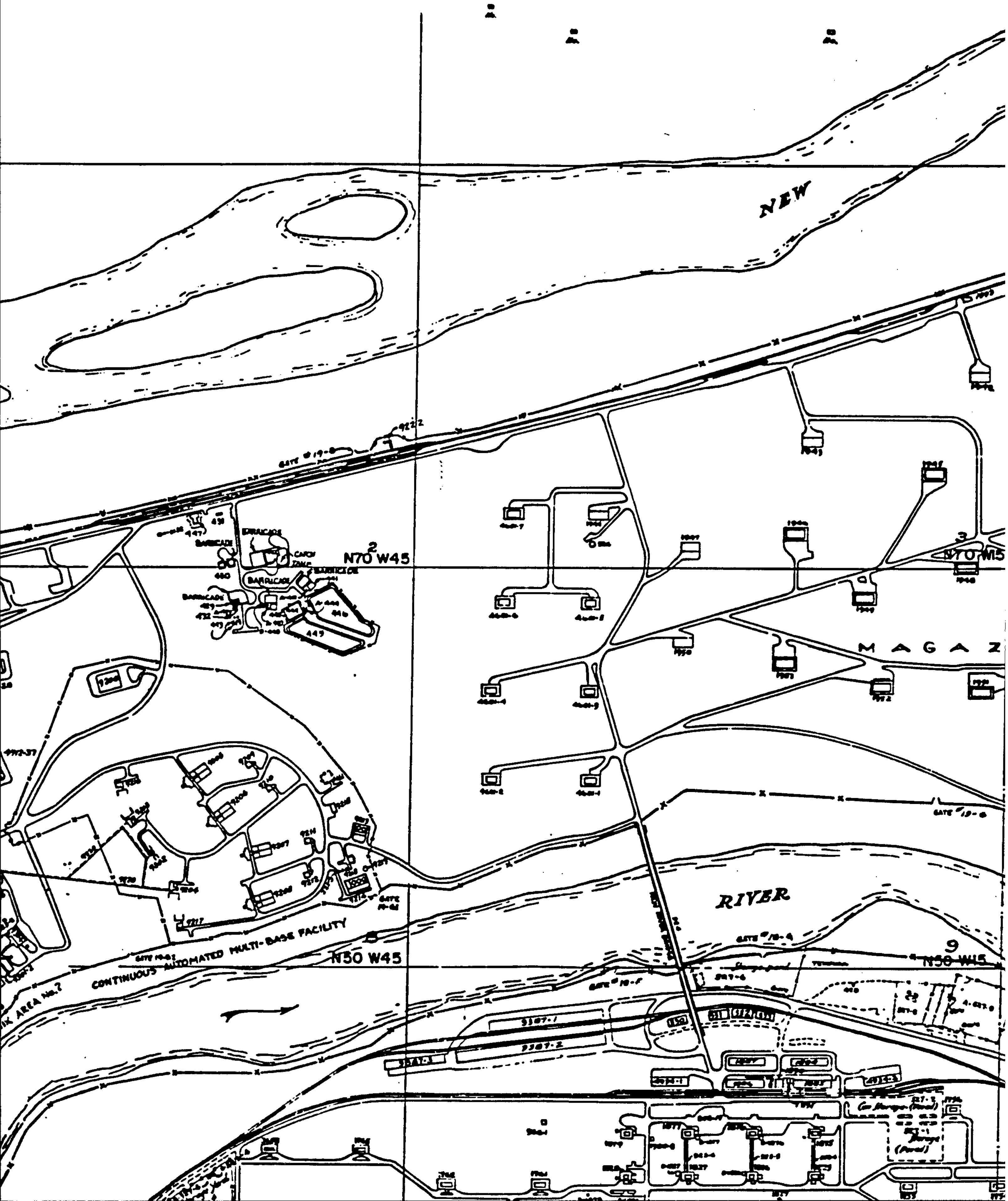
Roll Number: 10

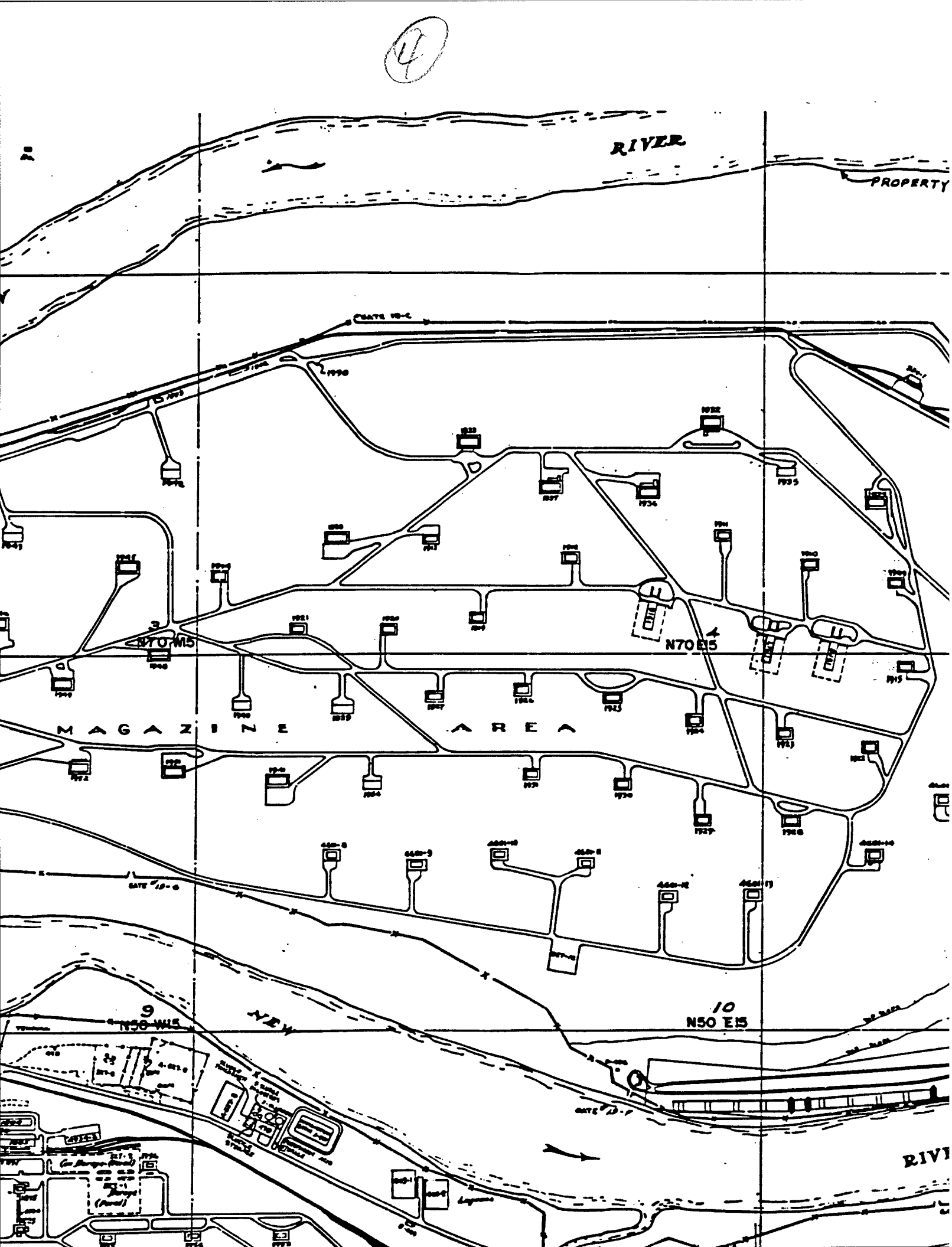
Exp. No.	Building No(s).	Description	Dir.	Date	Recorder
35	713	Frick Ammonia compressor in the Compressor Building		03/25/94	Hiatt
36	713	Second angle of Frick Ammonia compressor in the Compressor Building		03/25/94	Hiatt
37	713	Third angle of the Frick Ammonia Compressor in the Compressor Building		03/25/94	Hiatt

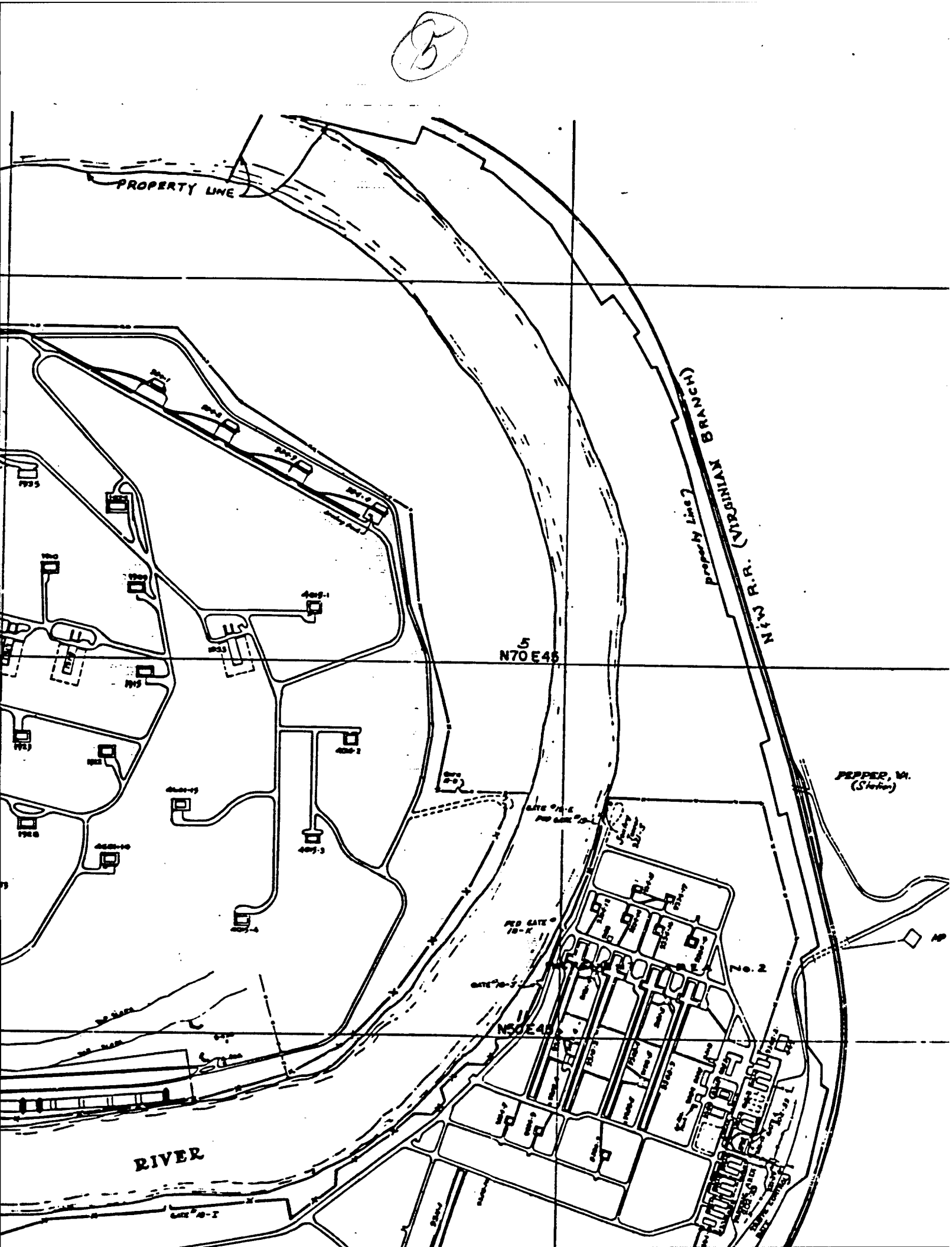

N50 W105
NEW
AREA


PROPERTY LINE
N70 W75
RIVER
N50 W75
PILOT
PREMIX AREA No. 2
CONTINUOUS
NG AREA No. 2
NEW

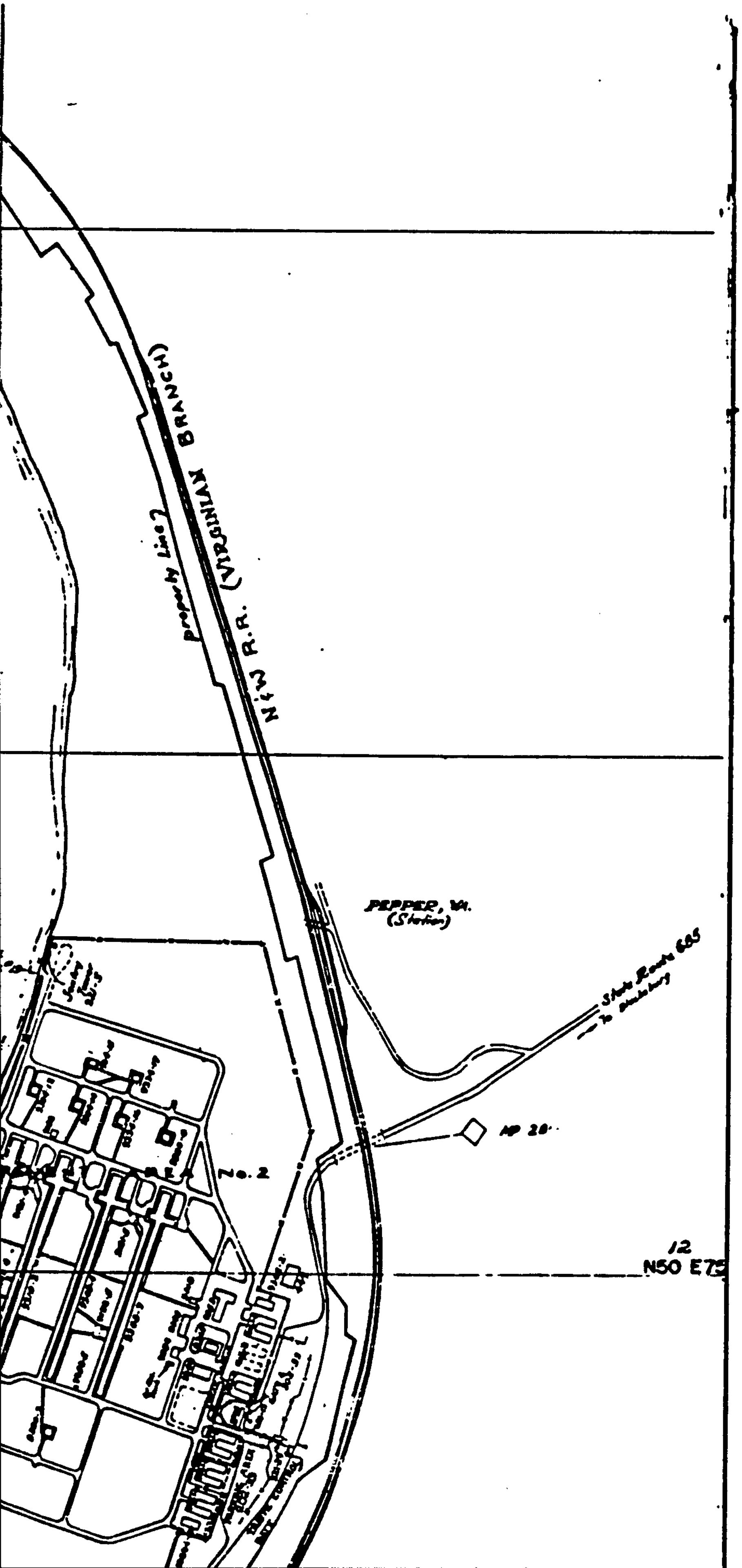
3

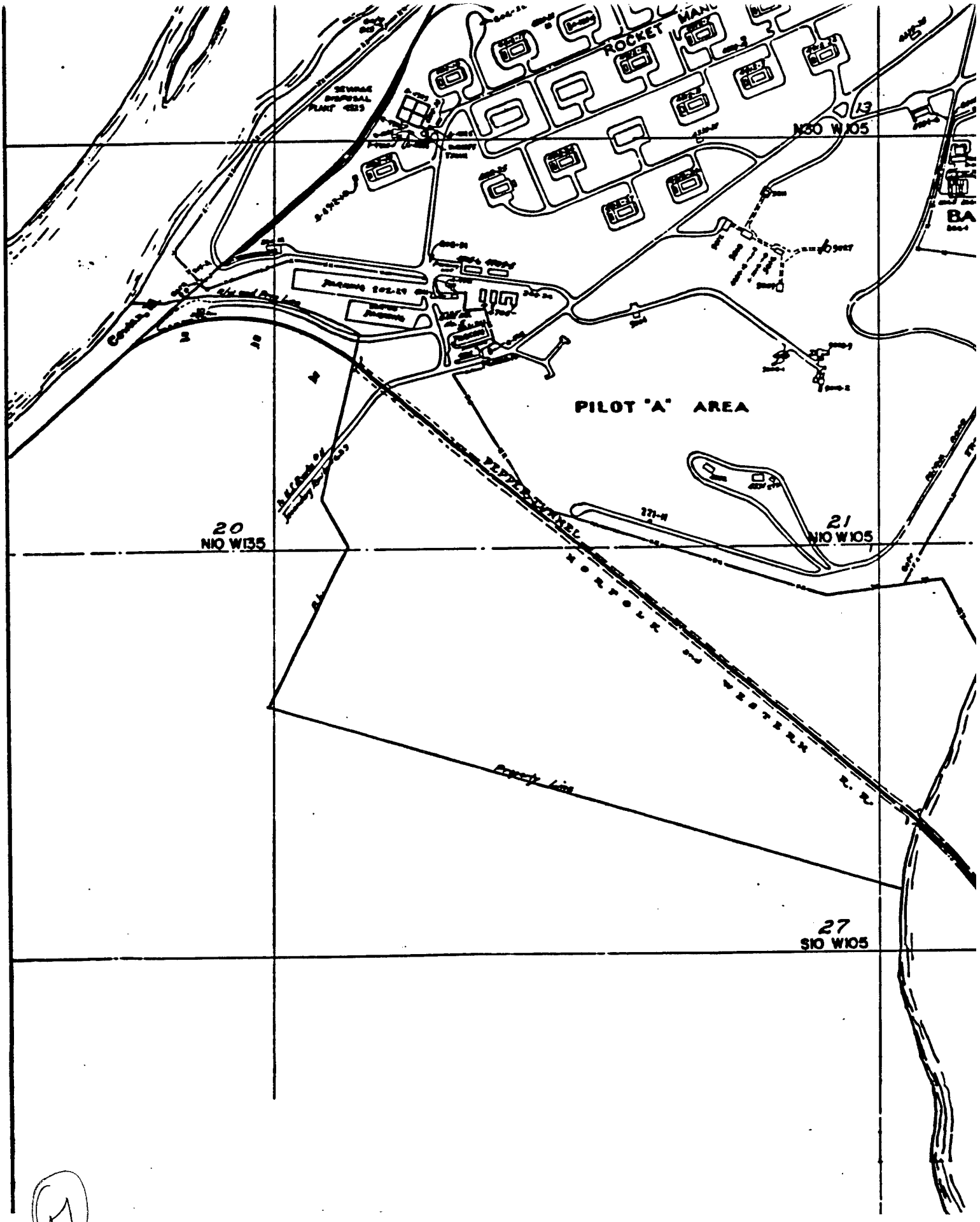

NEW
RIVER
MAGAZ
N70 W45
N70 W15
N50 W45
N50 W15
BARRICADE
CONTINUOUS AUTOMATED MULTI-BASE FACILITY
GATE 19-4

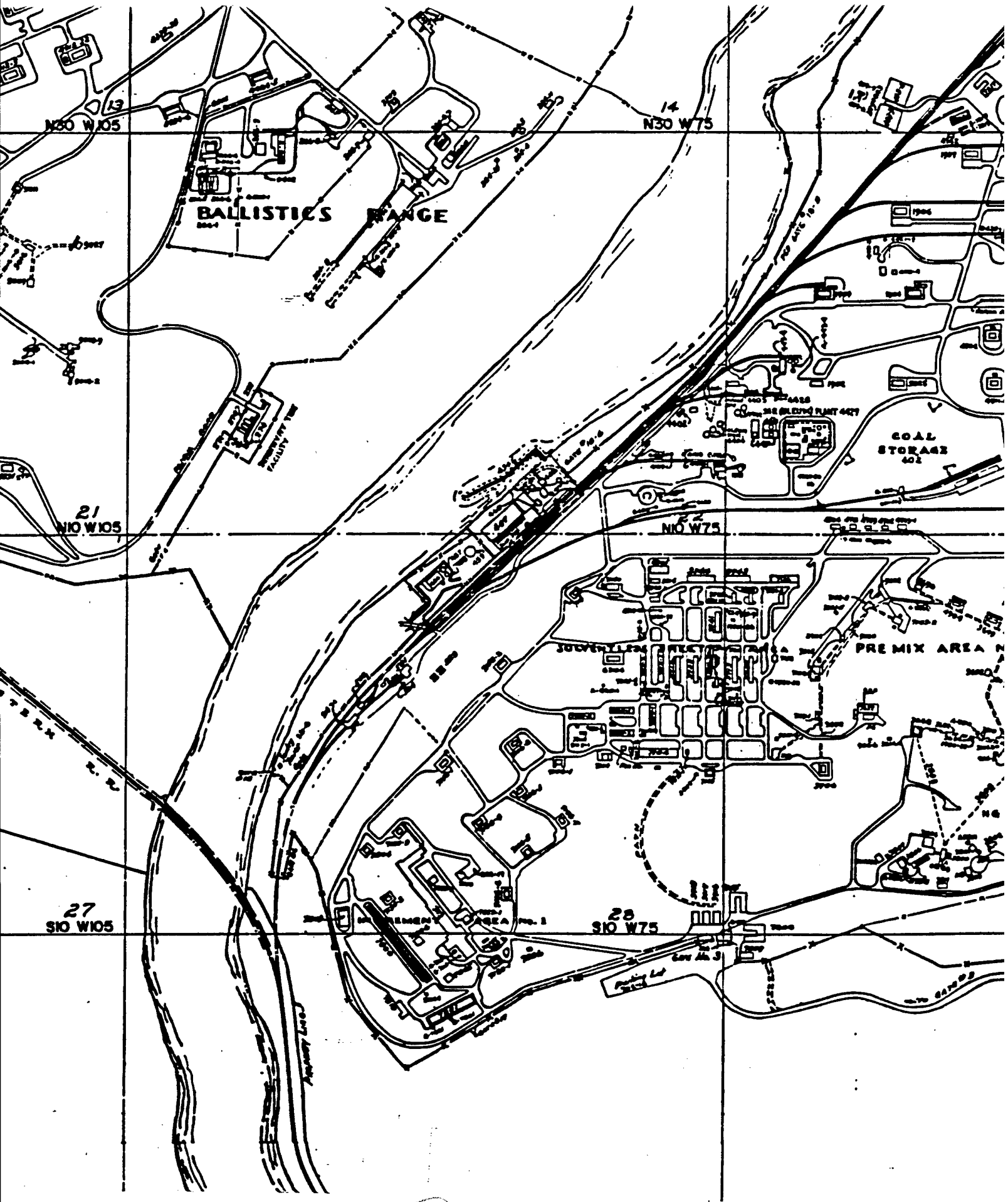

RIVER
PROPERTY
N70 W15
N70 E15
MAGAZINE AREA
N50 W15
N50 E15
RIVER

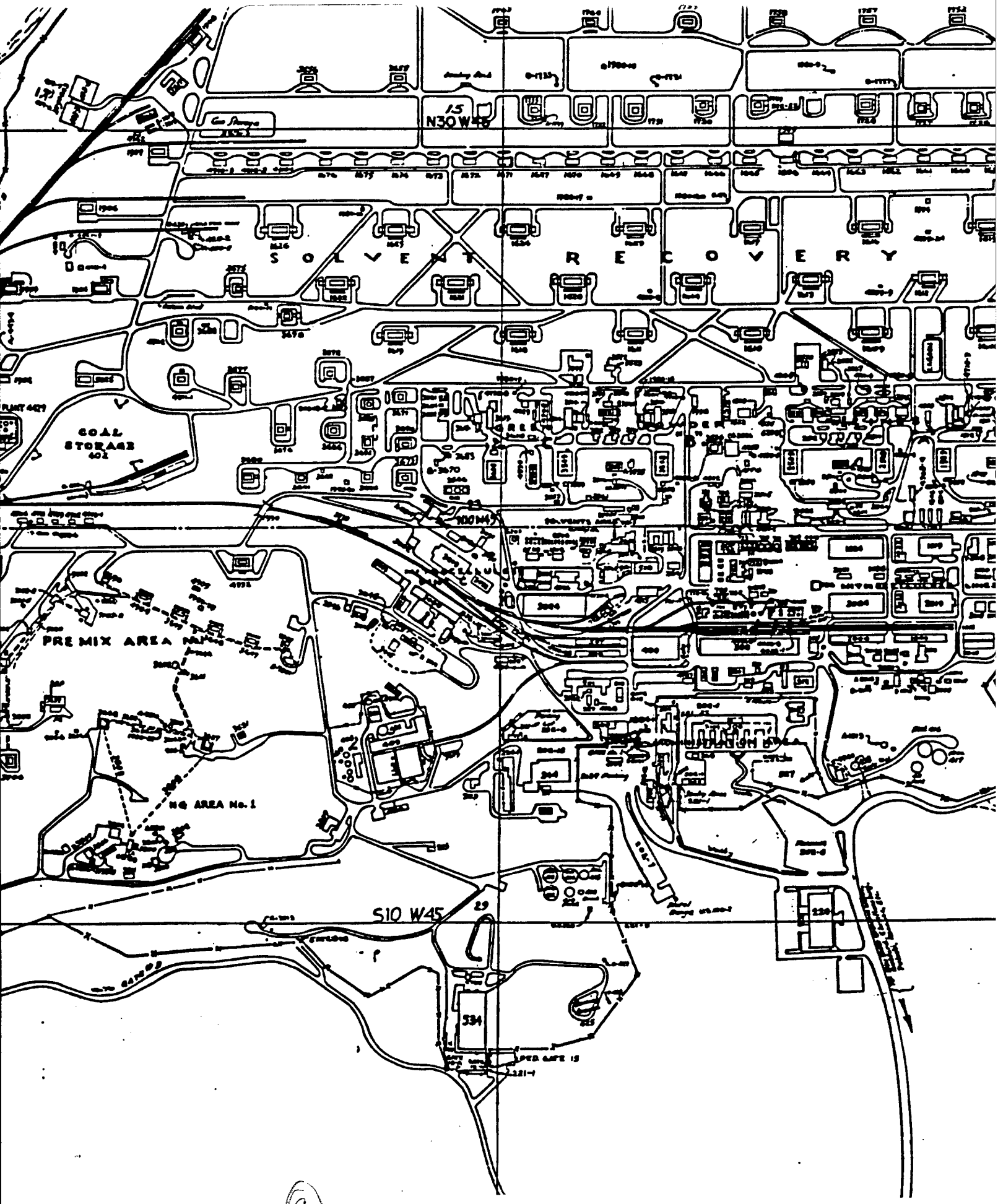

5
PROPERTY LINE
Property Line
N.&W. R.R. (VIRGINIAN BRANCH)
5
N70 E45
PEPPER, VA.
(Station)
No. 2
N50 E40
RIVER

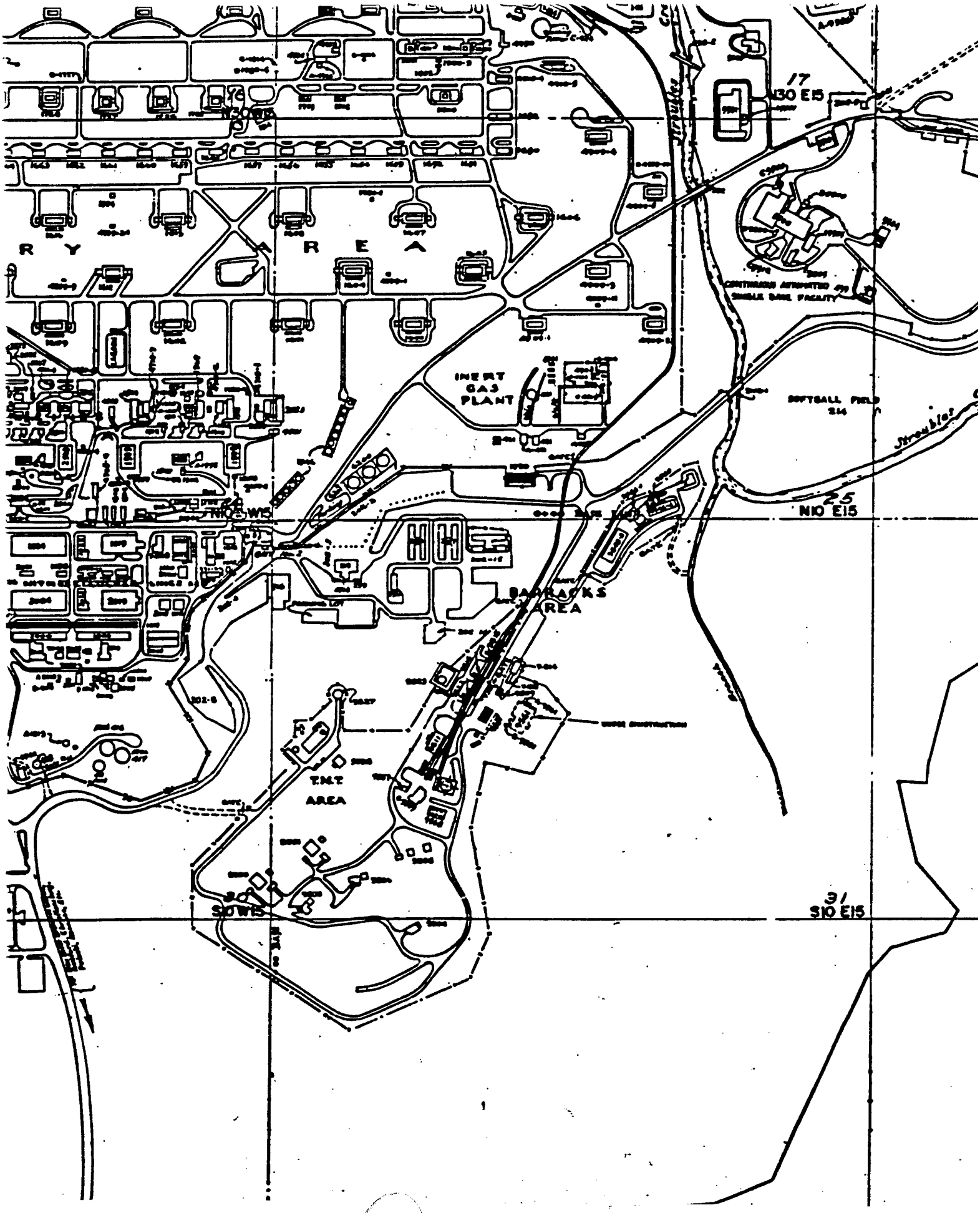
6

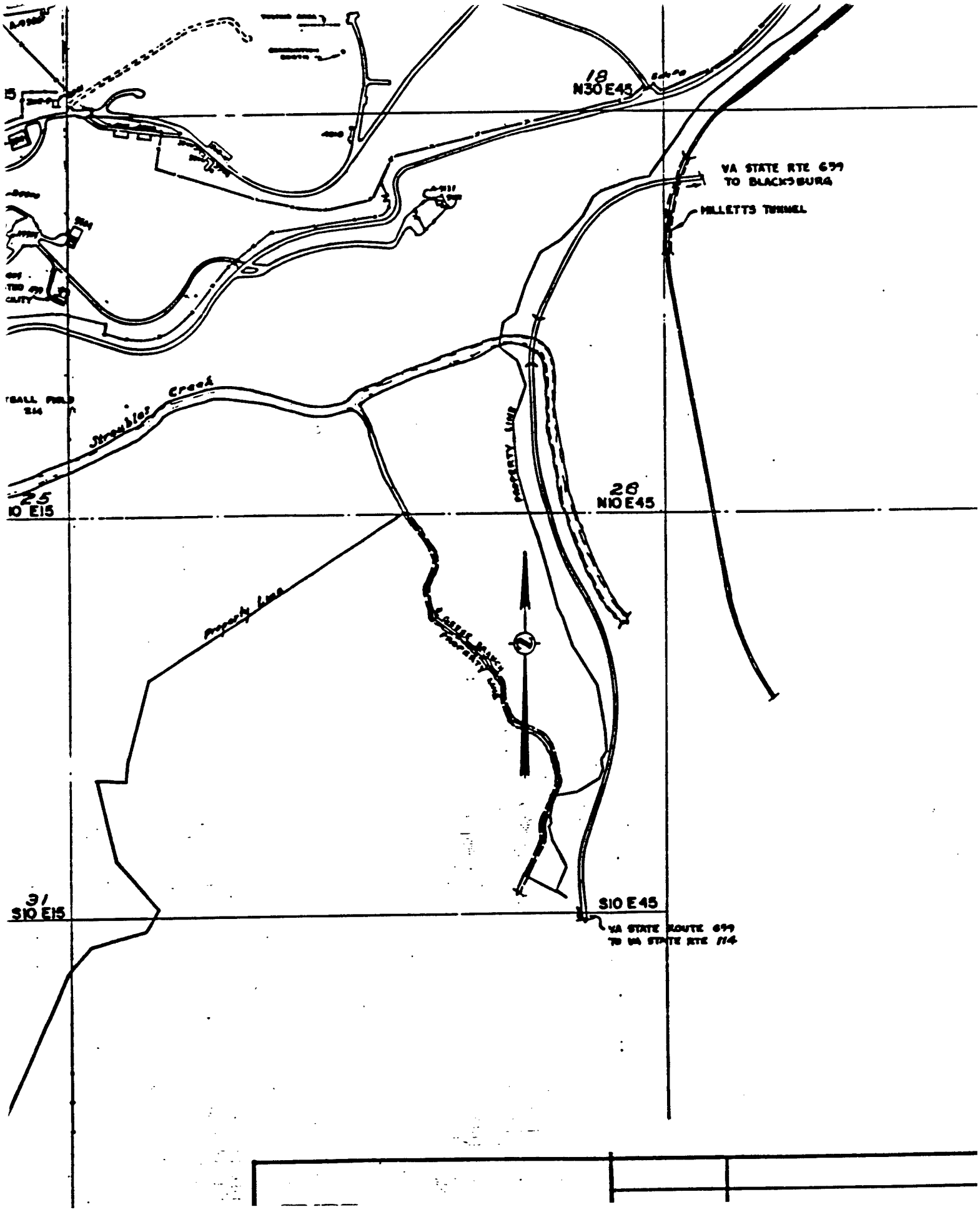

N&W R.R. (VIRGINIAN BRANCH)
property Line?
PEPPER, VA.
(Station)
State Route 685
to Blacksburg
No. 2
12
N50 E75


ROCKET
N30 W105
PILOT "A" AREA
20
N10 W135
21
N10 W105
27
S10 W105


N30 W105
13
14
N30 W75
BALLISTICS RANGE
COAL STORAGE
402
21
N10 W105
22
N10 W75
PRE MIX AREA
27
S10 W105
28
S10 W75


N30 W45
SOLVENT RECOVERY
COAL STORAGE
PRE MIX AREA
NG AREA No. 1
S10 W45
334


17
30 E15
R Y
A R E A
INERT GAS PLANT
SOFTBALL FIELD
NIO W15
25
NIO E15
BARRACKS AREA
T.N.T. AREA
S10W15
31
S10 E15

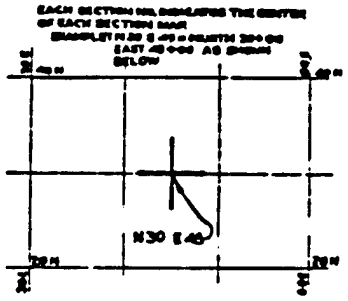

18
N30 E45
VA STATE RTE 699
TO BLACKSBURG
MILLETTS TUNNEL
Property Line
25
10 E15
26
N10 E45
Property Line
31
S10 E15
S10 E45
VA STATE ROUTE 699
TO VA STATE RTE 114

18
N30 E45

19
N30 E75

VA STATE RTE 699
TO BLACKSBURG

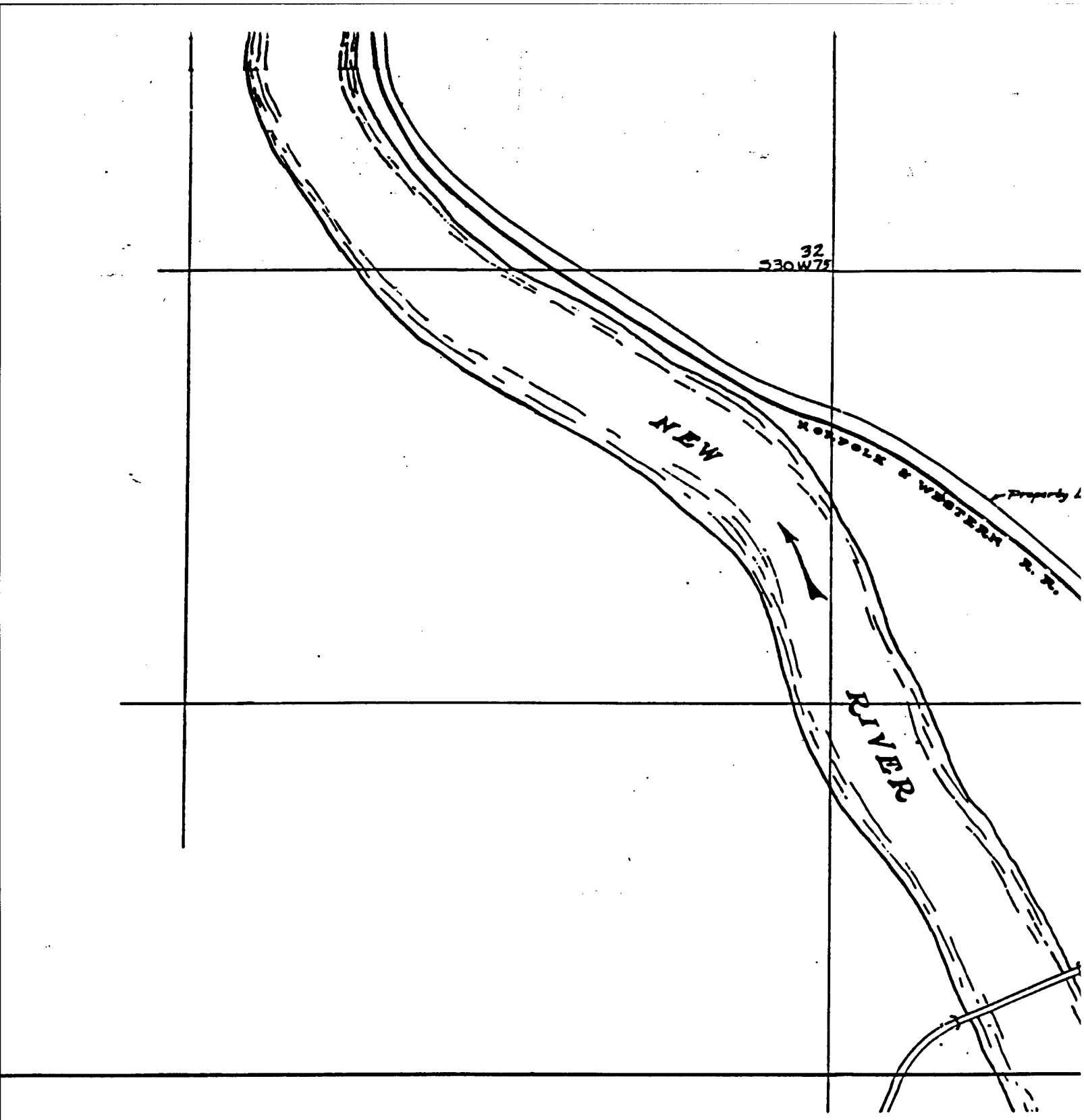
MILLETTS TUNNEL



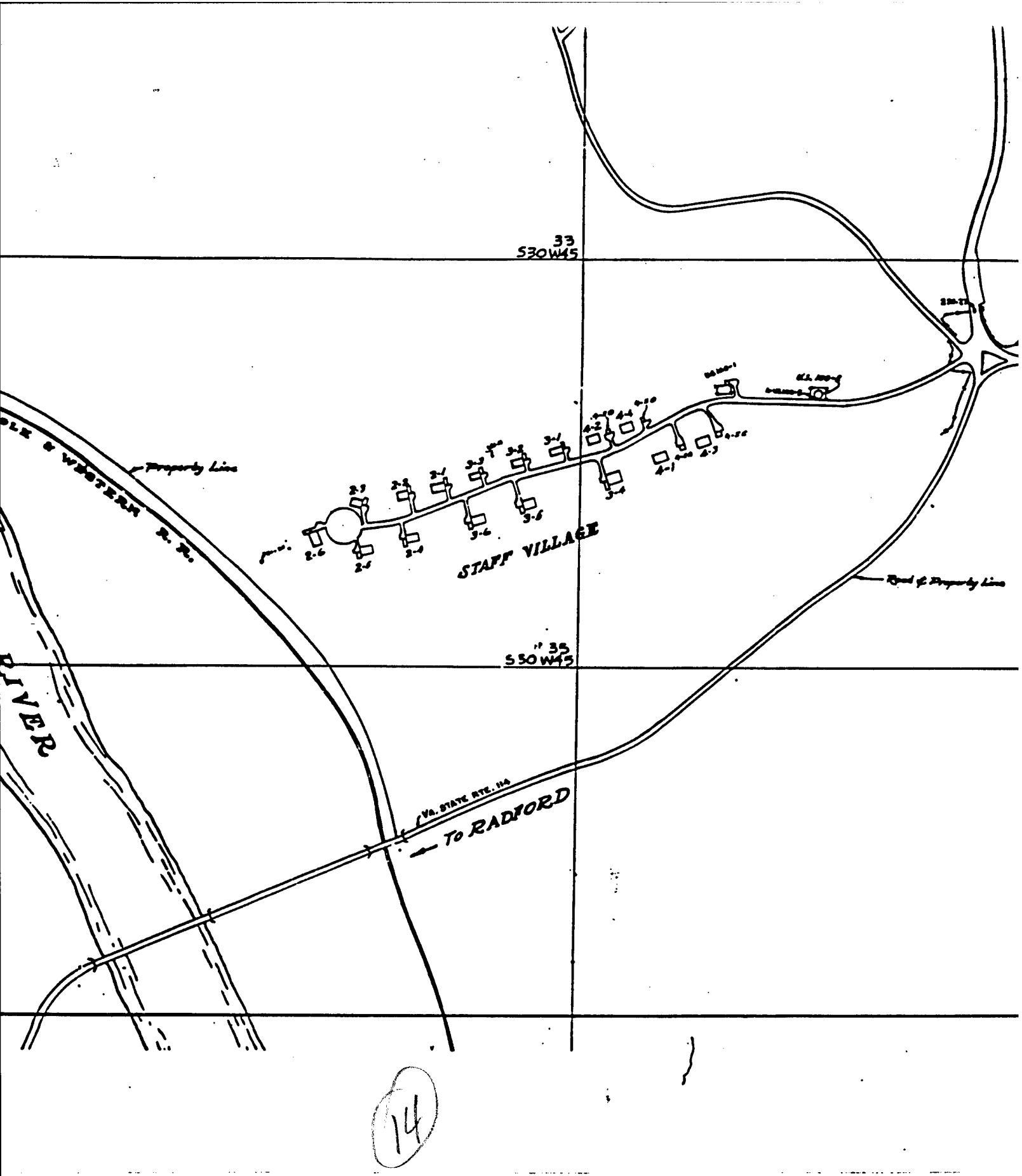
28
N10 E45

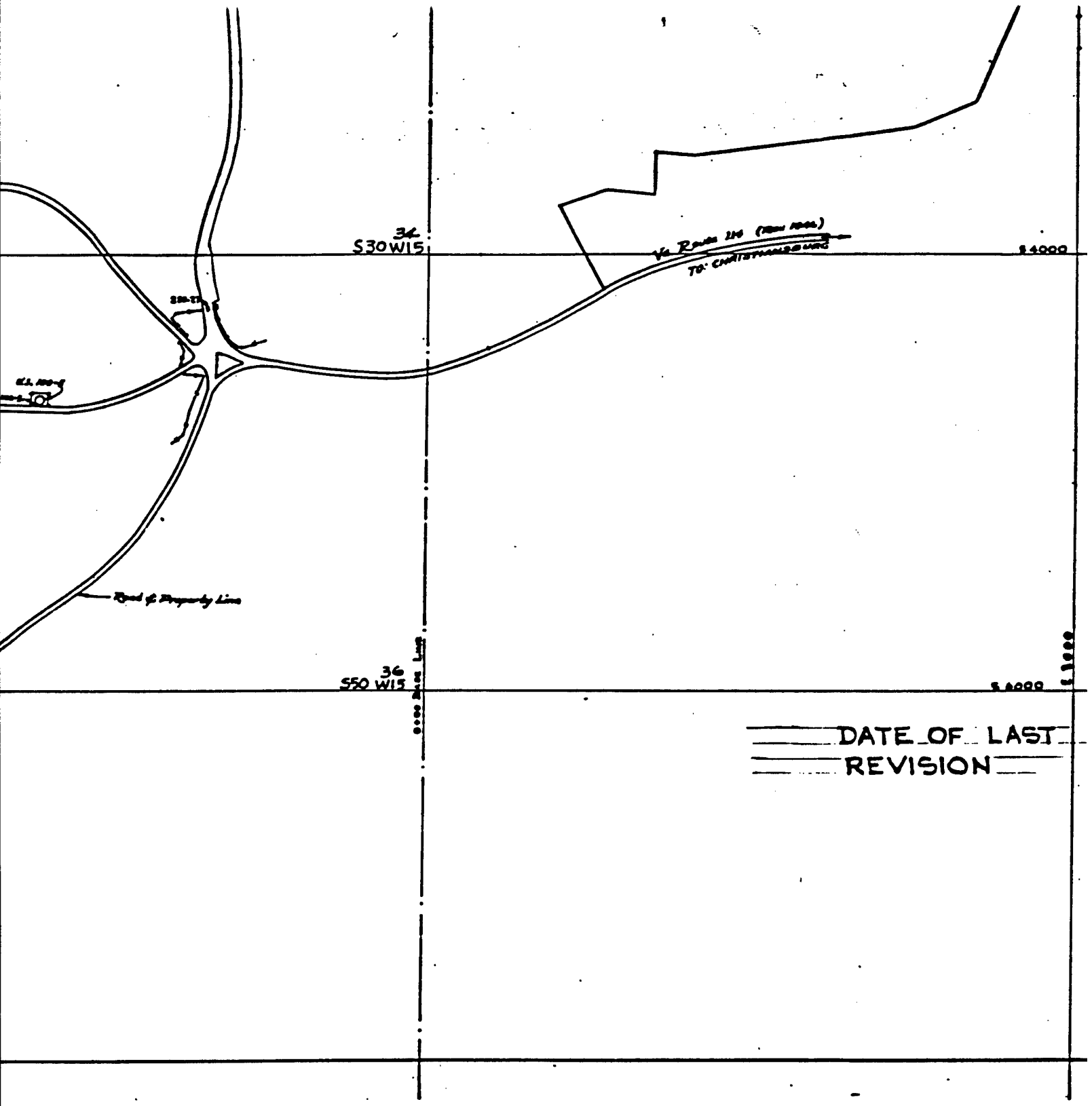
S10 E45

VA STATE ROUTE 699
TO VA STATE RTE 114

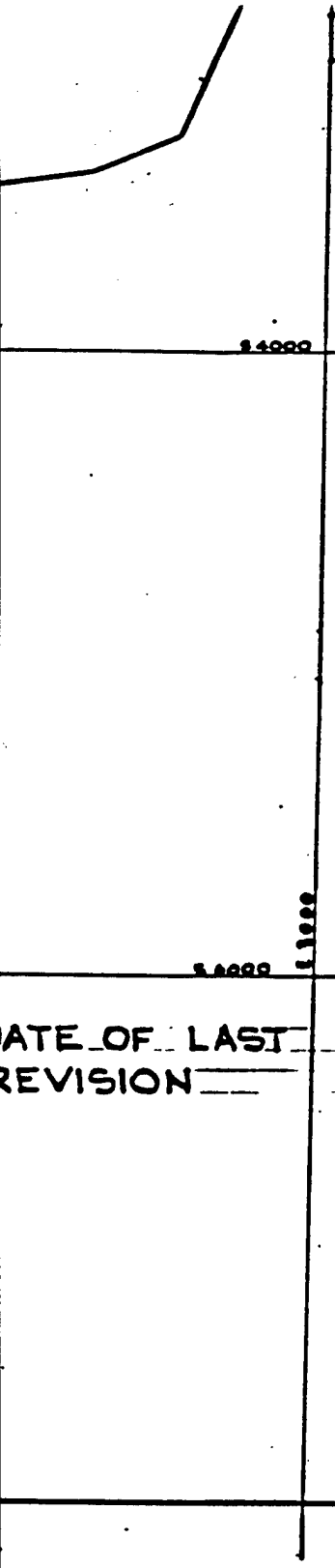


13


33
S30W45
Property Line
STAFF VILLAGE
Road & Property Line
35
S30W45
RIVER
VA. STATE RTE. 114
TO RADFORD



15



DATE OF LAST REVISION — 10-24-90

TYPE

CLASS

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DECIMAL ± _____

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APPROVED FOR GENERAL DESIGN AND SPECIFICATIONS

FOR HERCULES INCORPORATED

_____ ENGINEERING DEPT. _____ DATE

FOR U S. GOVERNMENT

_____ _____ DATE

_____

THIS DRAWING SHALL NOT BE USED OR REPRODUCED EITHER WHOLLY OR IN PART EXCEPT WHERE AUTHORIZED IN CONNECTION WITH PROCUREMENT FOR THE UNITED STATES GOVERNMENT.

NO.	

REFERENCE

RADFORD ARM
PL
U. S.
RADFORD

HERCULES IN

BUILDING _____

AREA: _____

TI
RAAP GENERA

1" = 6

SCALE: 1" = 600'

DRAWN BY: C. McCOY

APPR

_____

_____ DEPT. SUPT

PROJ | CON

0 0 0 0 0 0 0 4

ACCOUNT NO | SER

(16)

NO.	TITLE

REFERENCE DRAWINGS

RADFORD ARMY AMMUNITION PLANT

U. S. ARMY

RADFORD, VIRGINIA

HERCULES INCORPORATED

BUILDING _____ NO. _____

AREA: _____ DEPT.: _____

TITLE

RAAP GENERAL PLANT MAP

1" = 600'

SCALE: 1" = 600' DATE: _____

DRAWN BY: C. McCOY CHECKED BY: _____

APPROVALS

_____ _____

DEPT. SUPT SAFETY SUPT.

PROJ CONTRACT NO. DAAA09-86-Z-0003

ACCOUNT NO	SERIAL NO.	CLASS CODE	REV.
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